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Recovering Full Repair Costs of INDOT Infrastructure Damaged by Motor Vehicle Crashes

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JOINT TRANSPORTATION RESEARCH PROGRAM
INDIANA DEPARTMENT OF TRANSPORTATION &
PURDUE UNIVERSITY

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16. Abstract

There are approximately 4,000 instances per year where state property located along Indiana Department of Transportation (INDOT) maintained right-of-way needs to be replaced or repaired due to motor vehicle crashes. INDOT incurs significant financial losses to repair state property damage that is not recovered from the responsible driver because responsible parties cannot be identified and invoices do not reflect the fully-loaded cost of the repair. This study's objective is to identify enhanced management procedures to decrease the financial burden of the state by identifying best practices supporting the following four goals: 1) increasing the percent of invoices collected, 2) more effectively associating vehicle crash reports with crash damaged infrastructure, 3) decreasing the process time, and 4) ensuring that invoices reflect the fully-loaded repair cost. As part of the study INDOT's recovery process was compared to peer states, a prototype process to document crash damaged infrastructure was field tested, enhanced crash repair documents were developed, and crash report queries were evaluate.

Based on the research, this report recommends that the recovery process should begin with the placement of a tag by the investigating law enforcement officer at the scene of the crash. This tag would allow maintenance crews to directly link infrastructure damage with a specific vehicle crash report. This report recommends that a notification letter be sent to the driver and/or insurance company notifying them of the pending invoice. Past invoicing challenges show that these components are expected to increase the likelihood of successful repair cost recovery. This report also recommends that an administration fee be included in the repair costs to facilitate the new procedures. Performance measures have been proposed to evaluate the effectiveness of these procedures.

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LIST OF SYMBOLS AND ABBREVIATIONS

DSP	Damage to State Property
INDOT	Indiana Department of Transportation
CMB	Cable-Median Barrier
VMT	Vehicle-Miles Traveled
WMS	Work Management System
ISP	Indiana State Police

EXECUTIVE SUMMARY

RECOVERING FULL REPAIR COSTS OF INDOT INFRASTRUCTURE DAMAGED BY MOTOR VEHICLE CRASHES

Introduction

There are approximately 4,000 instances per year that require infrastructure located along right-of-way maintained by the Indiana Department of Transportation (INDOT) to be replaced or repaired due to motor vehicle crashes. This infrastructure includes guardrail, cable barriers, crash attenuators, lighting structures, signs, bridges, culverts, fences, traffic signals, pavement, and site earthwork re-grading to restore proper roadway drainage. A common example of infrastructure damage is shown in Figure 1. The guard rail pictured was damaged in early 2010 and subsequently repaired in the spring of 2010.

In the spring of 2009, Seymour District Traffic Systems Engineer Ed Cox and Professor Darcy Bullock conducted a preliminary screening of INDOT's cost recovery process and drafted a research need statement. In the fall of 2009, research project SPR-3411 was initiated with Purdue University to assess the fiscal effectiveness of INDOT recovering the full repair costs associated with repairing infrastructure damaged by motor vehicles. As part of the SPR-3411 project, Purdue surveyed all 50 states on their reimbursement practice and received responses from 41 states. Follow-up email and phone calls with 13 states and a webinar on September 15, 2010 provided opportunities to clarify details on best practices used by other states and to begin to synthesize those recommendations.

In addition to reviewing practices of other states, the research team consulted a variety of INDOT stakeholders, including Unit Foreman, District Staff, District Highway Maintenance Directors, Central Office Accounting Staff, and Deputy Commissioners to conduct a top-to-bottom assessment of INDOT practices and develop consensus on what practices would be most appropriate for Indiana. These consensus ideas were then further vetted by the research team through a series of field visits to crash sites, review of internal paperwork associated with those crashes, and analysis of invoicing timelines and collection rates.

Figure 1. Crash site on I-65 adjacent to mile marker 193.4 with approximately $1,600 in direct repair costs. Top: before repair. Bottom: after repair.

Findings

Based upon detailed examination of INDOT processes and best practices used by other states, it is estimated that there is an opportunity to improve collections by two million dollars to four million dollars annually by:

1. More effectively associating vehicle crash reports with crash damaged infrastructure;
2. Reducing the time between a crash and when an invoice is sent to the responsible party;
3. Ensuring that invoices reflect the fully-loaded repair cost;
4. Improving documentation sent to responsible party to reduce write-downs.

Implementation Recommendations

Based upon the review of internal INDOT procedures and best practices used by other states, the report makes the following recommendations:

- Deploy a state-wide law enforcement crash damage tagging system that will immediately associate crash damaged infrastructure to a crash report (see Figure 2). The tagging system will document the crash report identification number, crash date/time, and inspecting agency. This will reduce uncertainty when determining the responsible party. A pilot deployment of this program was conducted in early January 2011 along I-65 between Indianapolis and Lafayette.
- Develop partnerships with local agencies to extend the tagging system at a local level.
- Revise the state crash report title from "Damage to State Property" to "Damage to Public Sector Property."
- Consider adding an additional field to the Roadway Damage tag (Figure 2) for license plate numbers, so that in situations where no crash report is filed, such as for fuel spills or vehicle fires, the license plate number can serve as a tracking mechanism for the state to identify the responsible party.
- Develop an improved INDOT form for documenting crash repair costs (internally referred to as an M54). A revised M54 was drafted as part of this study and is included in the technical report referenced at the end of this technical

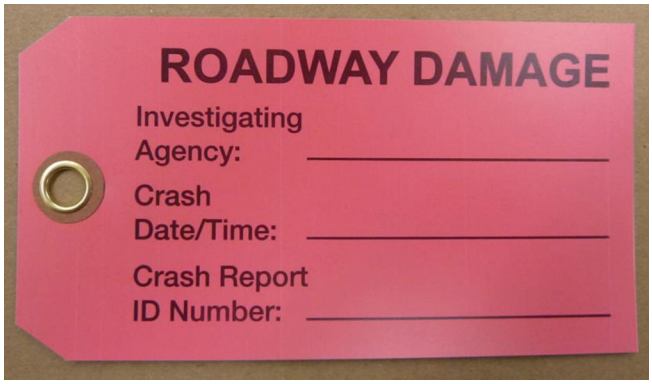


Figure 2. Damage to State Property tag.

summary. Ideally, this would be a web based form that supports digital photo uploads.

- INDOT maintenance crews (or the contractor) should document the crash damage by taking a photograph with a time stamp and GPS location recorded. These photographs help in resolving claims disputes with insurance companies regarding extent of damage and thus reduce write-downs.
- Upon determining responsible parties, a notification letter should be sent to the insurance company and driver of a pending invoice to repair crash damaged infrastructure.
- As part of the repair invoice, an overhead and/or administration fee should be collected by INDOT to cover the preparation and processing costs to invoice responsible parties. In May 2011, INDOT implemented an overhead fee of 28 %.
- INDOT staff using the ARIES crash reporting system should be trained to query on more than just the "damage to state property" field. The first of these training sessions was conducted on March 25, 2001, and should be continued on a regular basis.
- An organizational chart/document should be created at the district level to identify task owners for each phase of the crash repair recovery process. An overall process owner should be identified at the state level to oversee district processes and the overall cost recovery process.
- There is broad misconception among INDOT staff regarding where the funds from insurance reimbursement go. Perhaps a short article for an internal INDOT newsletter could help clarify how insurance claims are in fact returned to INDOT and why the timely processing of M54 forms benefit the districts.
- On a quarterly basis, tabulate four performance measures to evaluate the crash repair cost recovery process at the district and state level. These performance measures are as follows:
- Elapsed time between crash date and completion of the M54;
- Elapsed time between the completed M54 and the invoice date;
- Elapsed time between the invoice date and the collection date;
- Average % of invoiced amount collected.
- Evaluate INDOT processes and contracting procedures to determine if the guardrail repair contracts can be revised to require the contractor to invoice the insurance company to collect reimbursement. In cases where a contractor could not collect from an insurance company or responsible individual, INDOT would pay those costs.
- INDOT currently has 9 or 10 guardrail repair contracts. It may be appropriate to assess if there are opportunities to consolidate effort and reduce the number of guardrail repair contracts.

CHAPTER 1. INTRODUCTION

1.1. Study Background

The Indiana Department of Transportation (INDOT) maintains approximately 8,146 miles of state roads; 3,107 miles of US routes; and 1,089 miles of interstate. In 2009, there were 1,300 crashes along INDOT-maintained right-of-way where the crash reports indicated damage to state property. It is important for INDOT to document crashes resulting in damage to state property (DSP) and identify the responsible parties to invoice them for the full cost of the repairs.

The state property is repaired either within house staff, or subcontracted by INDOT. State property that is typically damaged in motor vehicle crashes includes, but is not limited to: bridges, cable-median barrier (CMB), crash attenuators, landscaping, guardrail, ITS equipment, light poles, right-of-way fences, signs, and traffic light poles. The repair cost for damaged property varies depending on the type and age of the property, and the extent of damage. The components of the repair costs typically include the equipment, labor, materials, maintenance of traffic, and clean-up needed to restore the infrastructure to its original state. Figure 1.1 illustrates an instance of damage to state property. The cost to repair or replace the DSP is borne either by the driver or in most cases the driver's insurance company. However, for a large number of DSP cases, INDOT bears the repair costs when a crash report is not associated to the damage, the full repair costs are not invoiced, or the invoiced offender or insurance company does not pay.

Figure 1.1: Example of damage to state property – guardrail requiring $2,451 in repair costs.

From January 1st 2008 to March 17th, 2009, Indiana, collected about 51% ($1.8 Million) of the total invoiced amount ($3.5 Million), Figure 1.2. Of the $1.26 Million invoiced in 2008 only $840K (66%) was recovered. For 2009, only 43% of the amount invoiced was recovered. Aged invoices are still being collected with some being held up in legal negotiations. This is the case with the $600,000 crane collision that occurred in 2009. A survey of peer state crash repair cost recovery processes found an average collection percentage of 74%, placing Indiana below this average in 2008 and 2009.

1.2. Study Objectives

This study seeks to address the cost recovery gap with a focus to:

- increasing the percent of invoices collected
- more effectively associating vehicle crash reports with crash damaged infrastructure
- reduce the process time between crash date and invoice for repair
- ensure that invoices reflect the fully-loaded cost of repair

The percent of invoices collected refers to the dollar amount collected versus the dollar amount invoiced. The invoiced amount is the fee billed to the responsible party to cover the costs to repair state property damage. The fully-loaded repair costs include labor and equipment to investigate the crash site, repair and clean-up damage, process the M54 documents, and process the invoice.

1.3. Preview of Recovery Process Evaluation

The time interval from between crash date to issuance of invoice, and ultimately to collection of invoice payment is expected to decrease if the reimbursement or crash repair cost recovery process initiated when the maintenance crew identified DSP. Figure 1.3 shows the general timeline to recover the repair cost for state property damage. There is a higher probability that a crash report can associated to a damaged infrastructure when the approximate crash date is known. Immediate association to a crash report is possible if the investigating law enforcement officer where to tag the damage with crash report information.

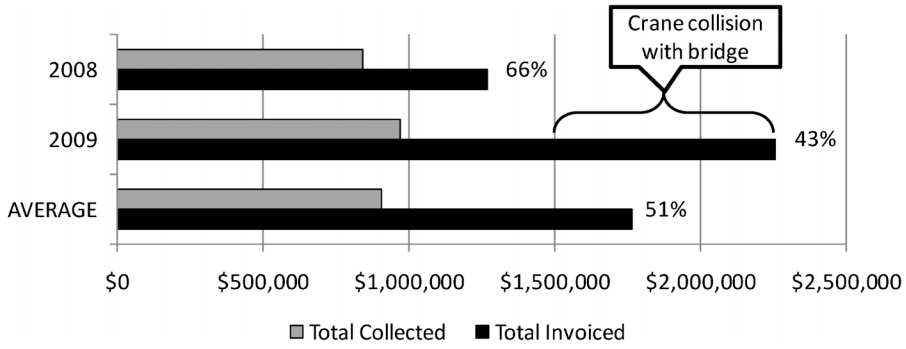


Figure 1.2: Indiana invoice and collection performance

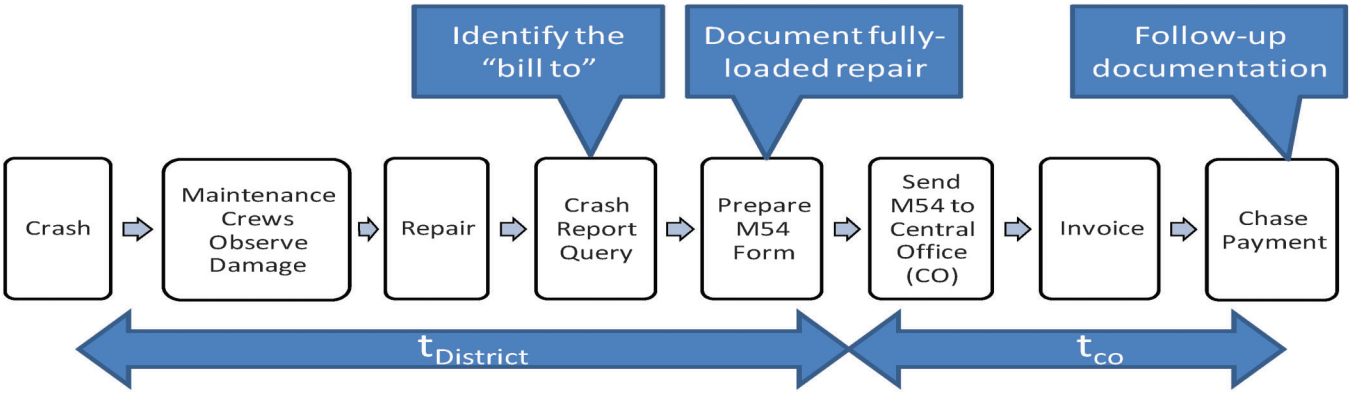


Figure 1.3: Timeline milestones for the crash repair cost recovery process

The current documentation procedure utilizes a crash documentation/estimation form identified by INDOT as form M54 (see Figure 1.4). Form M54 provides an itemized list of the repair costs to be invoiced to the driver and insurance company. Maintenance crews periodically drive state maintained routes to identify and inspect DSP. Based on this current practice, this report reviewed the possibility that the M54 begin when the maintenance crews observe damage. It was determined that the M54 report date occurred around four months after the crash date. The M54 is used to not only document the repair costs, but to provide justification to recover repair costs. It is expected that a higher invoice collection percentage will be realized as the time between the crash and M54 dates decrease. This decrease in processing time would ultimately decrease the overall time between the crash and invoice date.

1.4. Improving Internal Operations

There are limited metrics used within the state to evaluate the performance of the crash repair recovery process. Performance measures have been evaluated that identify practices which can lead to an increase invoice collections. These tools can be applied by district staff at various phases of the recovery process. Although each district has a person identified to perform the cost recovery task, there needs to be single point of contact responsible for the overall process at the state level. This person could coordinate the use of performance measures at a state lever to increase efficiency and collections.

1.5. Organization of this Report

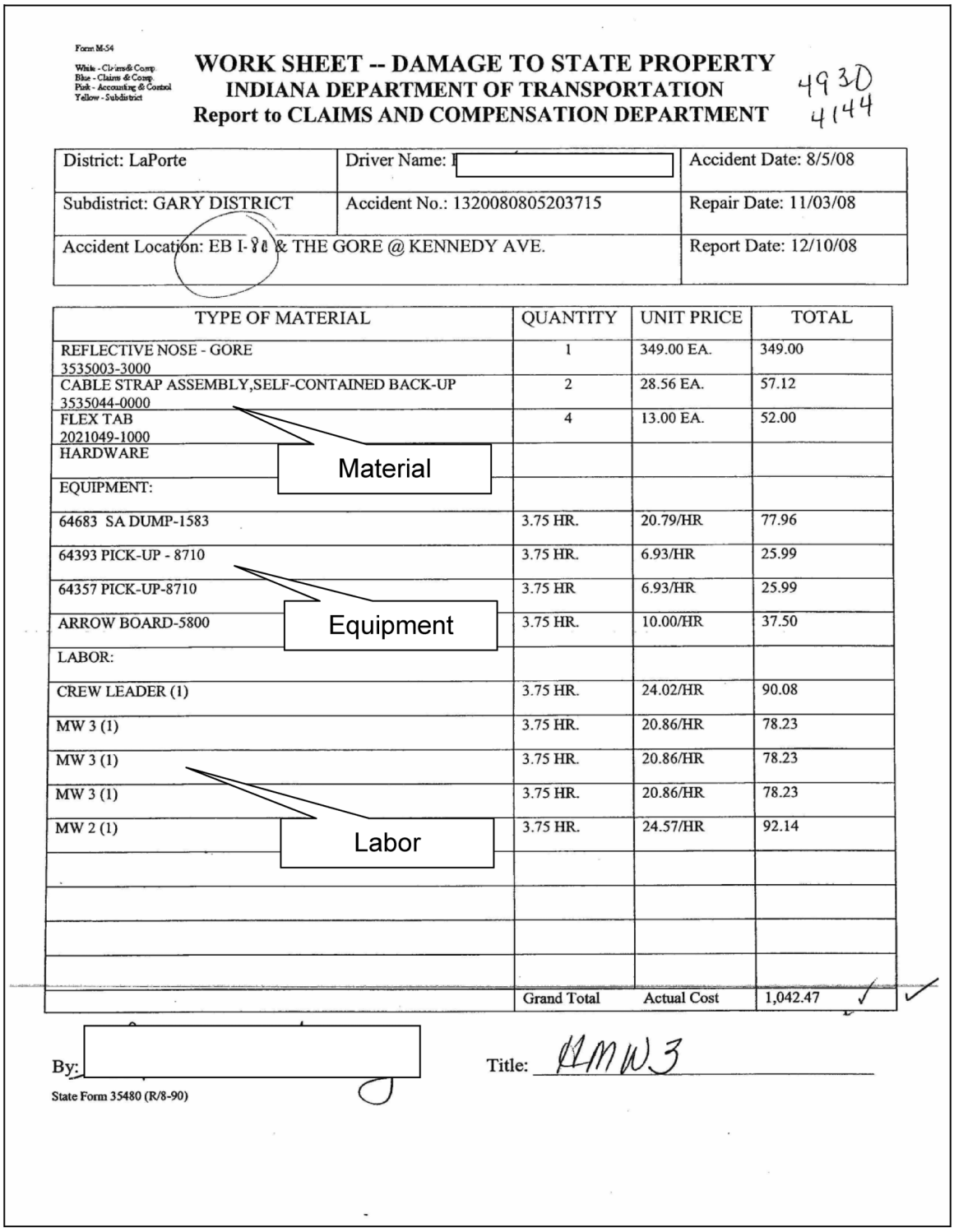
The challenges to meet the goals of this study are developed in Chapter 2. The current processes are evaluated in Chapter 3 and the practices of other agencies are discussed in Chapter 4. Chapter 5 compiles the evaluation and analysis from Chapters 2 – 4 to recommend field practices for INDOT. Competitive outsourcing is discussed in Chapter 6, and final recommendations are provided in Chapter 7.

CHAPTER 2. MOTIVATION

Approximately 190,000 crashes are documented in Indiana each year with approximately 2–3% involving DSP (see Table 2.1). It is a challenge to filter through the crash reports to find those with DSP. There are additional difficulties to recover reimbursements, decrease the recovery process time, and quantify the true repair costs; these challenges are discussed in this chapter.

2.1. Properly Identifying Crash Reports with Damage to State Property

The 2009 crash database identifies 4,010 occurrences of damage to state property marked as indicated by a "yes" under "State Property" in the crash report (Figure 2.3). However, this excludes several reports of crashes that might have caused damaged to infrastructure for which the DSP indicated. The query procedures were evaluated to identify opportunities to find more crash reports with DSP. There are 79 fields of the crash report that can be queried in ARIES, a database where all motor vehicle crash reports are recorded as seen in Figure 2.1. Figure 2.2 shows an example of DSP where the state property indicator box of the crash report was left blank as seen in Figure 2.3. The "state property indicator" query field corresponds to the "state property indicator" box on page one of the crash report as shown in Figure 2.3 and is commonly used to identify the crashes with DSP. Although state property is not indicated, the crash report narrative states "the semi then jack-knifed and landed on top of the west guardrail" (Figure 2.4). Furthermore, the field titled "collision with" on page 3 of the crash report (Figure 2.5) identifies that the vehicle hit "guardrail face." In instances such as this, the "state property indicator" box on the crash report is improperly left blank, which would be a missed opportunity to associate DSP with a crash report. This crash example on I65 at MM ~193.4 shows the potential to identify crashes involving DSP that are being excluded based on the "state property" indicator filter



Form M-54

White - Claims & Comp.
Blue - Claims & Comp.
Pink - Accounting & Control
Yellow - Subdistrict

WORK SHEET -- DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

493D
4144

District: LaPorte	Driver Name: [redacted]	Accident Date: 8/5/08
Subdistrict: GARY DISTRICT	Accident No.: 1320080805203715	Repair Date: 11/03/08
Accident Location: EB I-80 & THE GORE @ KENNEDY AVE.		Report Date: 12/10/08

TYPE OF MATERIAL	QUANTITY	UNIT PRICE	TOTAL
REFLECTIVE NOSE - GORE 3535003-3000	1	349.00 EA.	349.00
CABLE STRAP ASSEMBLY,SELF-CONTAINED BACK-UP 3535044-0000	2	28.56 EA.	57.12
FLEX TAB 2021049-1000	4	13.00 EA.	52.00
HARDWARE			
EQUIPMENT:			
64683 SA DUMP-1583	3.75 HR.	20.79/HR	77.96
64393 PICK-UP - 8710	3.75 HR.	6.93/HR	25.99
64357 PICK-UP-8710	3.75 HR	6.93/HR	25.99
ARROW BOARD-5800	3.75 HR.	10.00/HR	37.50
LABOR:			
CREW LEADER (1)	3.75 HR.	24.02/HR	90.08
MW 3 (1)	3.75 HR.	20.86/HR	78.23
MW 3 (1)	3.75 HR.	20.86/HR	78.23
MW 3 (1)	3.75 HR.	20.86/HR	78.23
MW 2 (1)	3.75 HR.	24.57/HR	92.14
	Grand Total	Actual Cost	1,042.47 ✓

Material

Equipment

Labor

By: [redacted]

Title: MW3

State Form 35480 (R/8-90)

Figure 1.4: An example of Form M54

2.1.1. Investigating Crash Reports with Potential Damage to State Property

One task in the study was to investigate crashes where the "state property" indicator on the crash report had been erroneously left blank and therefore jeopardized efforts to associate specific damage to reported crashes. The INDOT Traffic Management Center (TMC) staff ran a query on the crash database that identified such crash reports that had the state property indicator left blank, but reported a motor vehicle hitting the guardrail, bridgerail, guardrail end, or

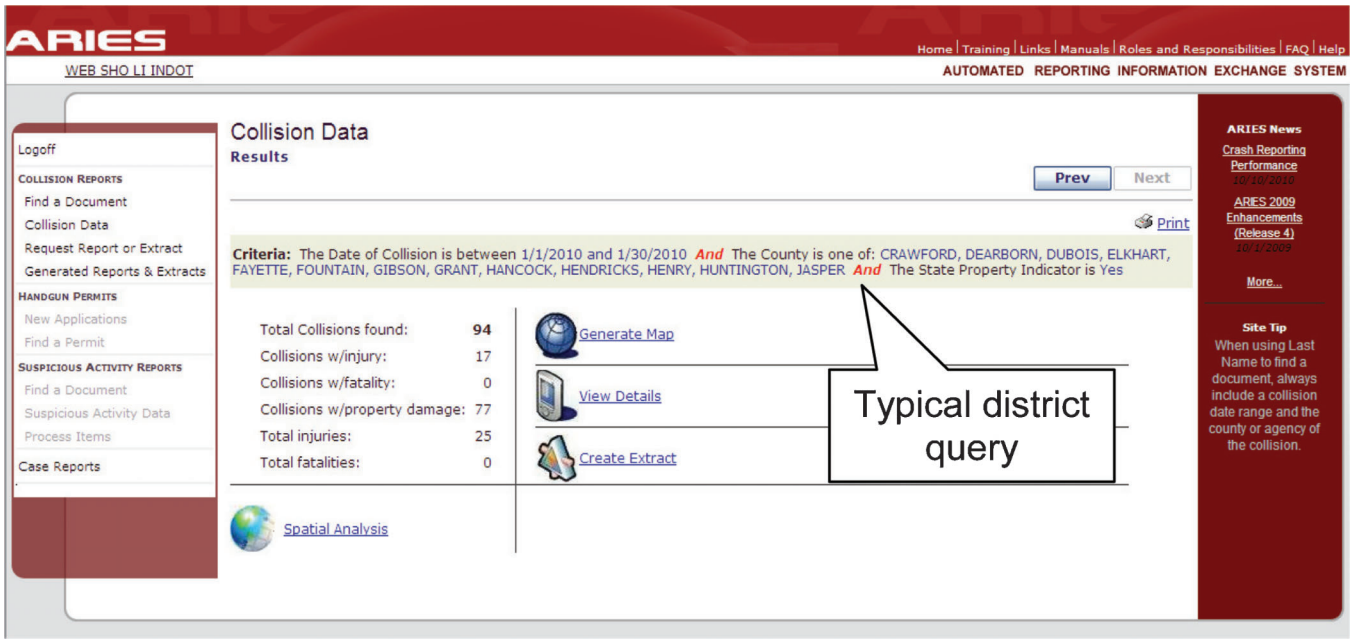


Figure 2.1: The ARIES web interface

guardrail face. Because this query is typically not run by districts, these crash reports would normally not be identified. Only crash reports that indicated significant damage might have occurred were visited, as seen on Table 2.2.

It was found that there were 65 instances of crash repairs or state property damage worth an estimated repair cost of $89,000 over the 3 ½ month interval. The crash sites with DSP and their repair cost estimates are presented in Table 2.3. The repair quantities were determined using engineering judgment based on the type of property damaged and the extent of damage or repair assessed visually. For each damage site, the repair amount was calculated by applying the Crawfordsville guardrail maintenance contract line item fees and counting the estimated repair quantities. The reports of all crashes that had occurred at the approximate location of the repair site were examined to determine if the damage could be attributed to another crash report. The crash locations with asterisks have had their repair estimate verified by INDOT personnel.

a) Crash site before repair

b) Crash site after repair

Figure 2.2: Guardrail property damage and repair; crash at I65 MM ~193.4

TABLE 2.1:
2009 crash count comparison

2009 Crash Count			
Interstate	Total Crashes	DSP Frequency Indicated on Crash Report	Percentage of DSP (frequency)
65	3,585	433	12%
69	1,975	284	14%
74	775	130	17%
70	1,454	200	14%
64	542	51	9%
465	1,649	162	10%
469	149	22	15%
865	32	6	19%
265	126	12	10%
All Interstates	10,287	1,300	13%
All Indiana Roads	189,835	4,010	2%

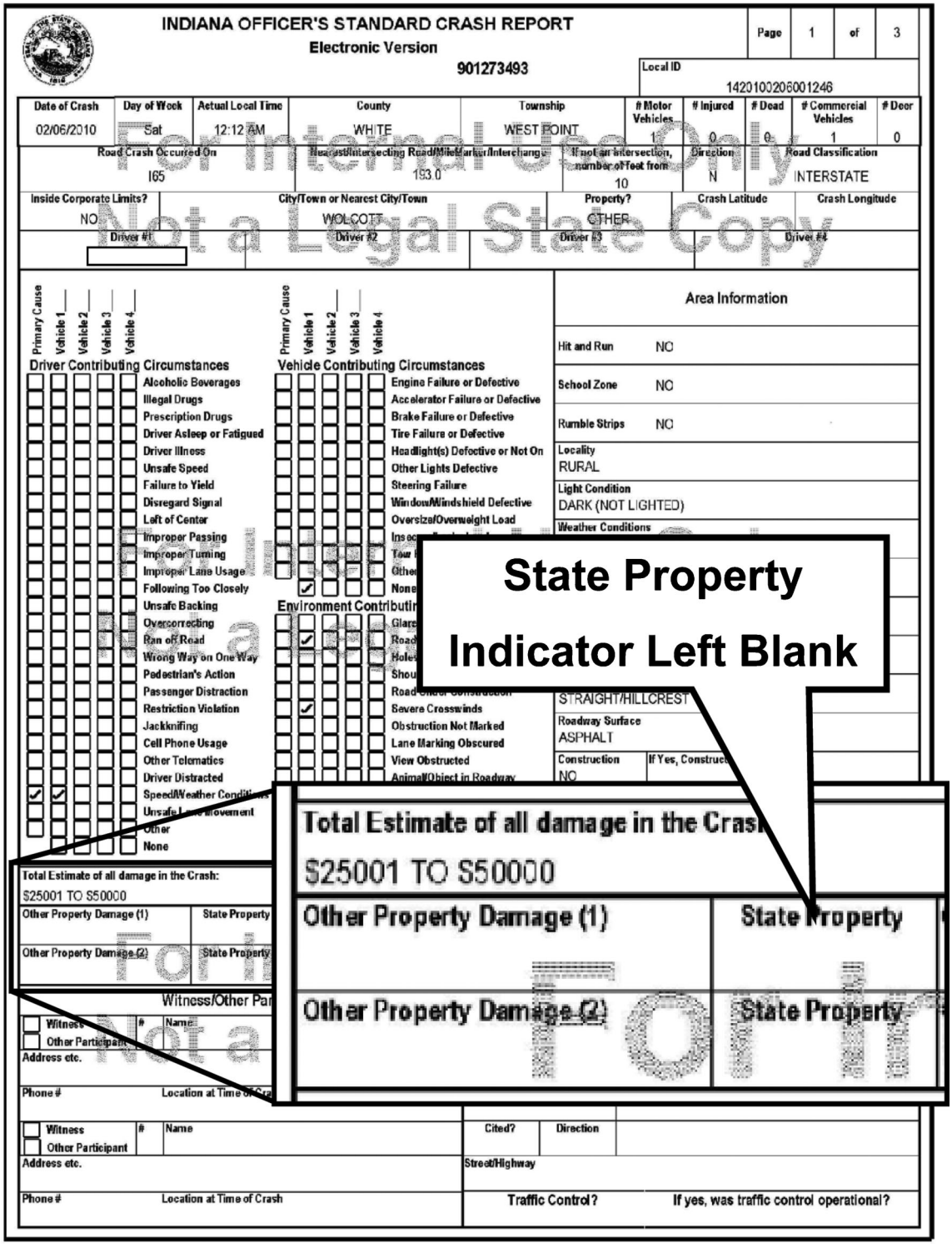
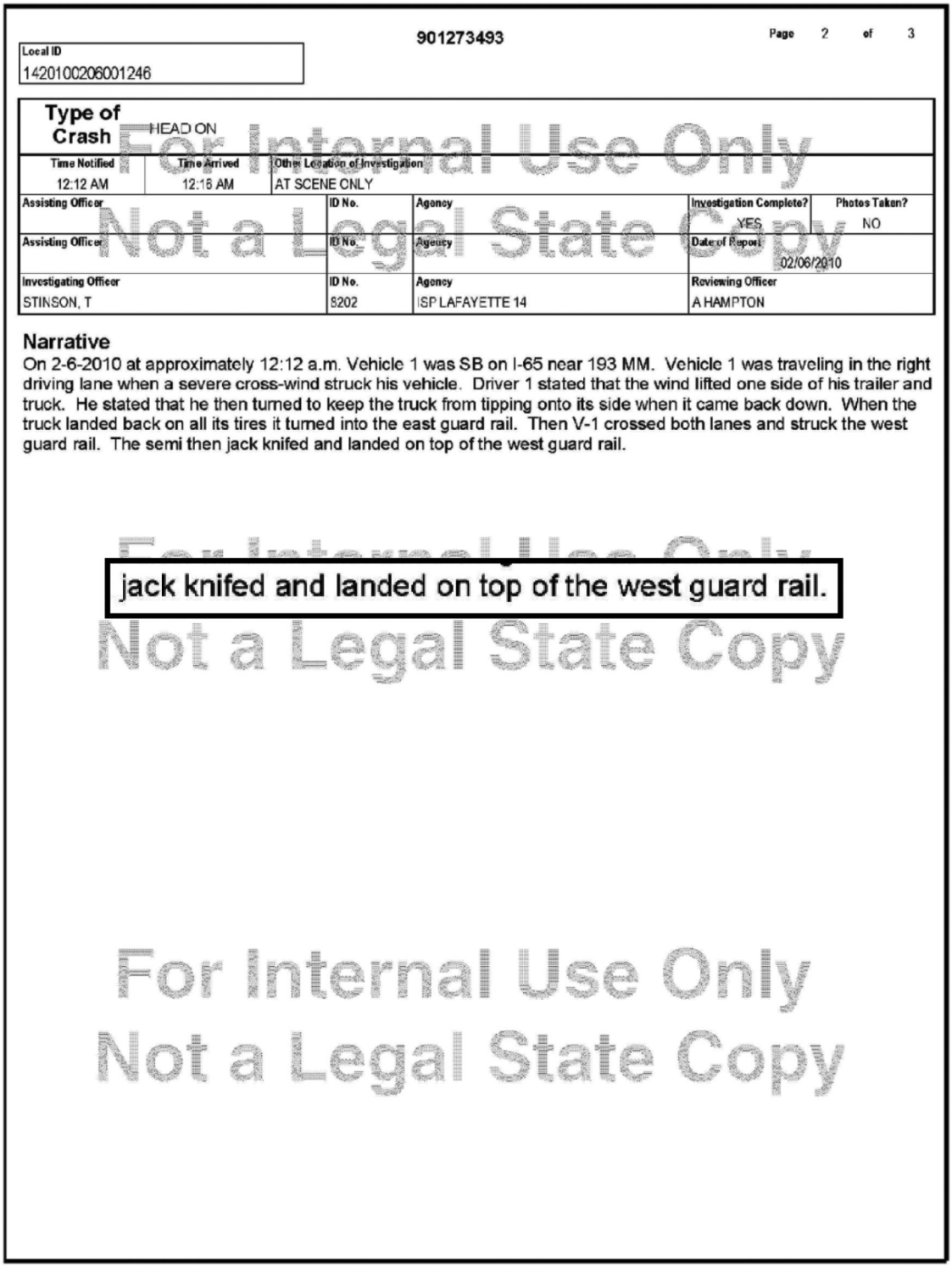


Figure 2.3: Crash report page 1 of I65 MM ~193.4

After performing this investigation, nine 2009 M54s of state property repair costs were received from Fort Wayne to associate to crash reports. Using the two queries described in this section, six crashes were matched (Table 2.4). Their total cost of repair is approximately $13,000. The confidence level is the measure of certainty that the crash report is associated to the correct state property damage. It varies according the number of crash reports similar to the crash scene and location.



901273493

Page 2 of 3

Local ID
1420100206001246

Type of Crash HEAD ON

Time Notified	Time Arrived	Other Location of Investigation
12:12 AM	12:18 AM	AT SCENE ONLY

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO
Assisting Officer	**ID No.**	**Agency**	**Date of Report**	
			02/06/2010	
Investigating Officer	**ID No.**	**Agency**	**Reviewing Officer**	
STINSON, T	8202	ISP LAFAYETTE 14	A HAMPTON	

Narrative

On 2-6-2010 at approximately 12:12 a.m. Vehicle 1 was SB on I-65 near 193 MM. Vehicle 1 was traveling in the right driving lane when a severe cross-wind struck his vehicle. Driver 1 stated that the wind lifted one side of his trailer and truck. He stated that he then turned to keep the truck from tipping onto its side when it came back down. When the truck landed back on all its tires it turned into the east guard rail. Then V-1 crossed both lanes and struck the west guard rail. The semi then jack knifed and landed on top of the west guard rail.

jack knifed and landed on top of the west guard rail.

Figure 2.4: Crash report page 2 of I65 MM ~193.4

2.2. Collections on Invoiced Accounts

The goal for INDOT regarding DSP crash repair cost recovery is to have 100% collected of the amount invoiced. Based upon the DSP accounting database, INDOT collected 66% in 2008 and 43% in 2009 of the invoiced amount. As seen in Figure 2.6, there is a large difference between total invoice amounts and amounts collected.

Figure 2.5: Crash report page 3 of I65 MM ~193.4

2.3. Reducing Lag Time in the Crash Repair Cost Recovery Processes

A principal challenge faced in the DSP repair cost recovery process is the lengthy and highly variable time spent on processing the DSP cases to yield an invoice. As shown in Figure 2.7, this ranges from approximately 0 to 1302 days. Some factors contributing to the variation in time are the differences in administration practices at the districts: at certain districts, the processing beings when DSP is first observed, at other districts it begins when the crash report arrives or after the repairs. Figure 2.8 shows the time between a

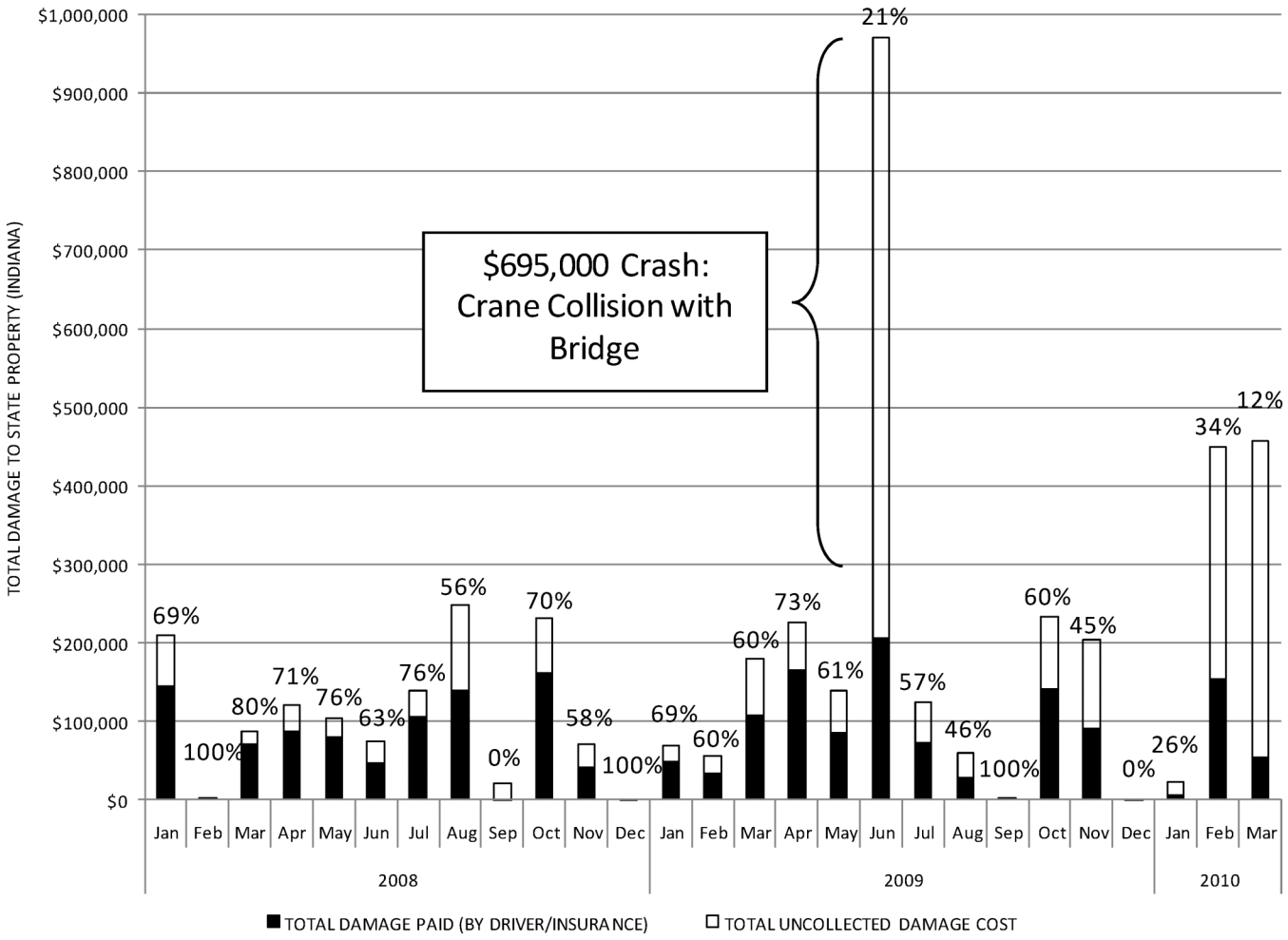


Figure 2.6: DSP reimbursement amount collected/uncollected for invoices billed January 2008 – March 2010 year for all INDOT routes (n=3,152)

completed M54 and an invoice ranges from approximately 5 days to 930 days. The potential monetary losses resulting from a lengthy processing time are shown from the following insurance dispute example as described by INDOT central office staff:

> "*I got a call from Hanover insurance for an accident that occurred 1/29/09, amount of invoice is $1,641.06. Their insured is challenging the damage that is being billed, saying that the pictures do not represent what the guard rail looked like after his accident. The pictures were taken 07/20/09 – (6 months after the date of the accident).*"

The consequences of the half-year delay in photographing the crash site resulted in a settlement for half the invoice amount. INDOT central office staff states this pending result:

> "*The insurance company is willing to settle the claim for ½ the amount of the invoice which is $820. Or they will need something to prove that their insured did all the damage and an explanation why it took 6 months to get pictures/fixed.*"

The duration for M54 processing is not strongly correlated to the amount of the invoice or size. Figure 2-9

Figure 2.9 indicates there is no significant relationship between the invoice amount and the time M54 processing time.

An example of a lengthy M54 processing time is shown in Figure 2.10. The M54 was processed approximately 2½ years after the crash date, thus it was difficult to identify the repair costs or repair date. According to the crash reports (Figure 2.11, Figure 2.12, and Figure 2.13), this crash appeared to have significant DSP. Thus INDOT obviously missed an opportunity to obtain reimbursement.

2.4. Associating the State Property Damage to a Crash Report

Interstate highways commonly have crashes involving state property. In 2009, there were approximately 1,300 DSP crashes along interstates. These accounted

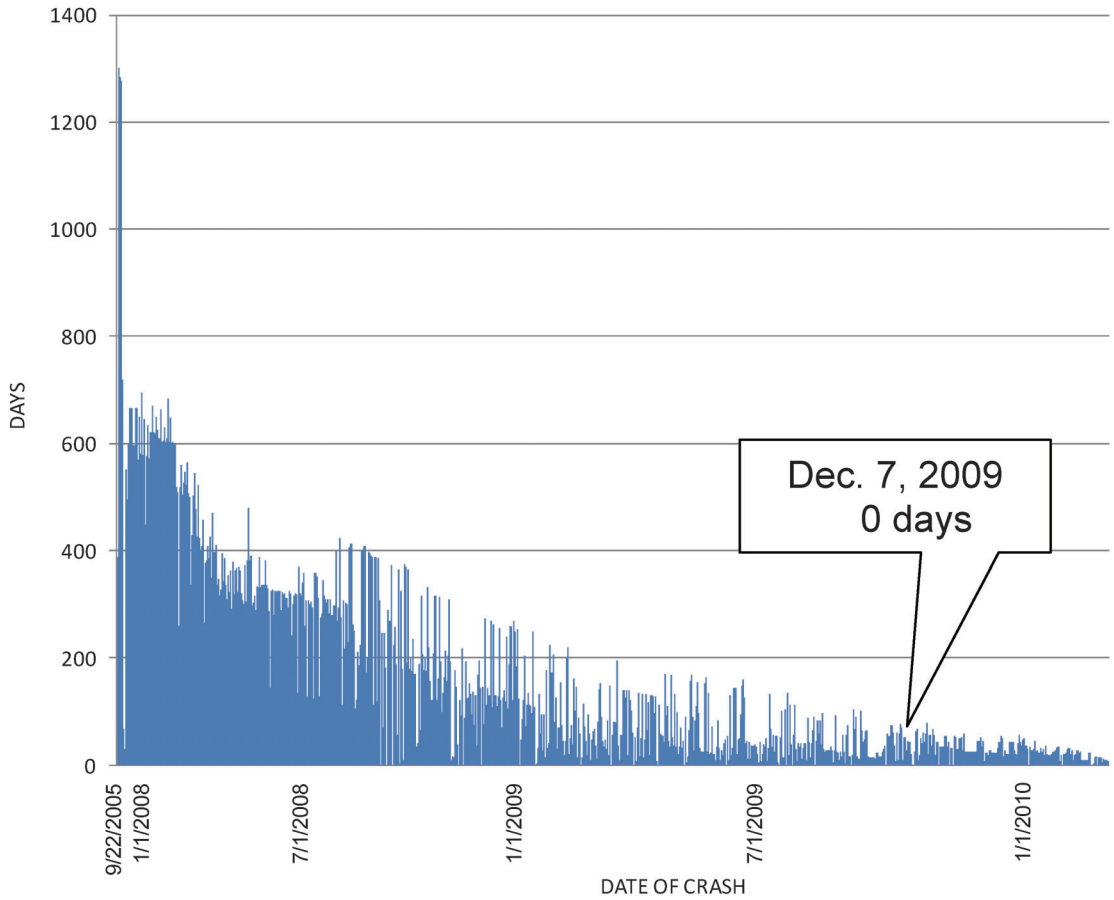


Figure 2.7: Lag time from date of crash to the date the M54 is created based on invoices sent in February and March of 2010 (n=876)

TABLE 2.2:
Potential sites with DSP crash reports with state property indicator left blank (1/1/2010 – 4/10/2010)

District	Possible Sites	Sites Visited	Sites with Clear Damage or Recent Repairs
Crawfordsville	72	64	14
Fort Wayne	56	34	12
Greenfield	125	38	10
LaPorte	49	20	6
Seymour	108	60	22
Vincennes	16	3	1
TOTAL	426	219	65

for over 25% of the total highway DSP crashes that year. This is expected due to the dominant share of vehicle-miles traveled on these routes. Also, along an interstate section, there are certain locations that are prone to a greater number of crashes: bridges, weaving sections, and curves. Additionally, there are certain times of the year when more crashes occur compared to other times: snow, rain, and windy weather periods. A crash often generates secondary crashes upstream, thus causing several crashes within close proximity of each other in a short amount of time. It has been observed from crash statistics that cable-median barrier and guardrail often result in multiple crashes with potential DSP in close proximity as shown Figure 2.14.

In the example shown in Figure 2.15, three M54s were created for damage caused by one crash. Multiple M54s create a challenge when interacting with insurance companies and often result in only the first M54 being paid by the insurance company

The effort needed to associate a crash report increases as more time passes and as more secondary crashes occur. The M54 for a repair is not reimbursed when there is uncertainty who was the responsible party. Such uncertainty is exacerbated when there is conflicting information on the crash report (see example in Figure 2.16). An improved system associating crash reports to damage at the crash site would increase the association rate and number of invoices.

2.5. Invoicing Full Repair Costs for Crash-Damaged State Infrastructure

With a median invoice of $419, we believe Indiana does not collect the fully-loaded cost of repairing DSP. Key components of crash repair recovery excluded in the repair costs are the labor spent identifying and investigating crashes with DSP, associating a crash

TABLE 2.3:
Repair estimate summary ($88,903) from Purdue site investigation (1/1/2010 – 4/10/2010)

a) Seymour District		**b) Crawfordsville District**		**c) Fort Wayne District**	
Crash Location	Cost Est	Crash Location	Cost Est	Crash Location	Cost Est
I64 113 EB	$295	I74 58.0 W*	$642	I469E 29 EB	$840
I64 118 WB	$2,700	I74 49.0 E*	$4,927	I69 128 NB	$676
I64 120.0 WB	$2,700	I74 9 W *	$526	I69 128 SB	$297
I65 46.0 NB	$430	I74 9 W *	$823	I69 129 SB	$430
I65 49F NB	$430	I65 197.4*	$2,852	I69 138 SB	$430
I65 55.0 NB	$676	I70 4 E*	$1,270	I69 59 NB	$430
I65 55.0 SB	$1,239	I70 7 E*	$1,955	I69 69 NB	$2,110
I65 76 NB	$430	SR46 Jeffers S*	$263	I69 86 SB	$2,700
I65 76(US31) NB	$3,560	I65 148 N*	$3,254	US27 100W SB	$2,700
I65 76B 1NB	$379	I65 175 S*	$868	US30W @ 650W	$2,110
I65 99 SB	$1,434	I65 193 S*	$1,580	US30W @ Oday Rd	$379
I74 136.0 EB	$594	SR32 SR47 W*	$2,042	US35 @ 500W WB	$3,130
I74 160.5 WB	$512	US231 800 N*	$2,451		
I74 169 WB	$727	I70 23 EB	$493		
I74 170 WB	$430				
SR135 Landmark Ave NB	$2,700				
SR265 7.4 WB	$2,700				
SR37 Old SR37 NB	$594				
SR446 Judah Rd SB	$594				
SR7 Main St NB	$430				
US50 @ CR410N WB	$1,700				
US50 Gatch Hill Rd WB	$1,216				
District Totals	$26,470		$23,946		$16,232

d) Greenfield District		**e) LaPorte District**		**f) Vincennes District**	
Crash Location	Cost Est	Crash Location	Cost Est	Crash Location	Cost Est
I70 140 EB	$2,700	I65 205 NB	$688	SR56 NE Dubois Rd	$2,700
I69 7 EB	$447	I94 20.5 EB	$1,700		
I69 24 NB	$2,700	SR8 @ 800E EB	$478		
I70 150 EB	$215	SR23 @ Crumstown Hwy EB	$526		
I70 @ SR3 EB	$192	US6 @ SR49 EB	$2,700		
I65 @ 128.4 NB	$461	US41 @ 1200 S	$482		
I65 SB TO I465 EB	$430				
I70 89 EB	$2,700				
I74 113 EB	$2,700				
I465 5.4 WB	$436				
District Totals	$12,981		$9,274		$2,700

TABLE 2.4:
2009 Fort Wayne repairs associated to crash reports by Purdue

2009 Fort Wayne Repairs - Crash Reports Queried by Purdue					
Crash Report ID	Crash Location	Crash Date	Repair Date	Confidence Level	Repair Cost
901026183	I69 59+80	12/21/2008	5/4/2009	Medium	$610
901001602	I69 68+70	11/17/2008	5/4/2009	High	$2,794
901087536	I69 63+35	4/5/2009	5/4/2009	High	$3,498
901096907	SR9 106+38	4/22/2009	5/5/2009	High	$2,869
901048601	SR15 39+75	1/23/2009	5/5/2009	High	$2,589
900998631	US24 119+20	11/18/2008	5/5/2009	High	$642
Total Repair Cost					$13,003

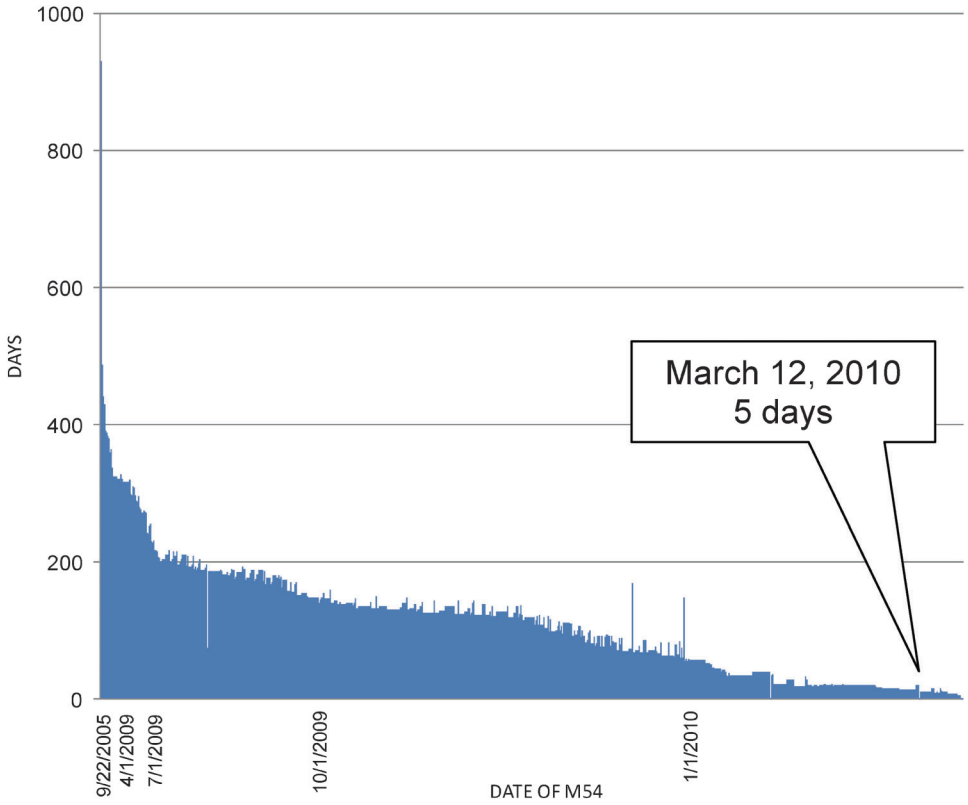


Figure 2.8: Lag time between the date the M54 is created and the invoice date based on invoices sent in February and March of 2010 (n=876)

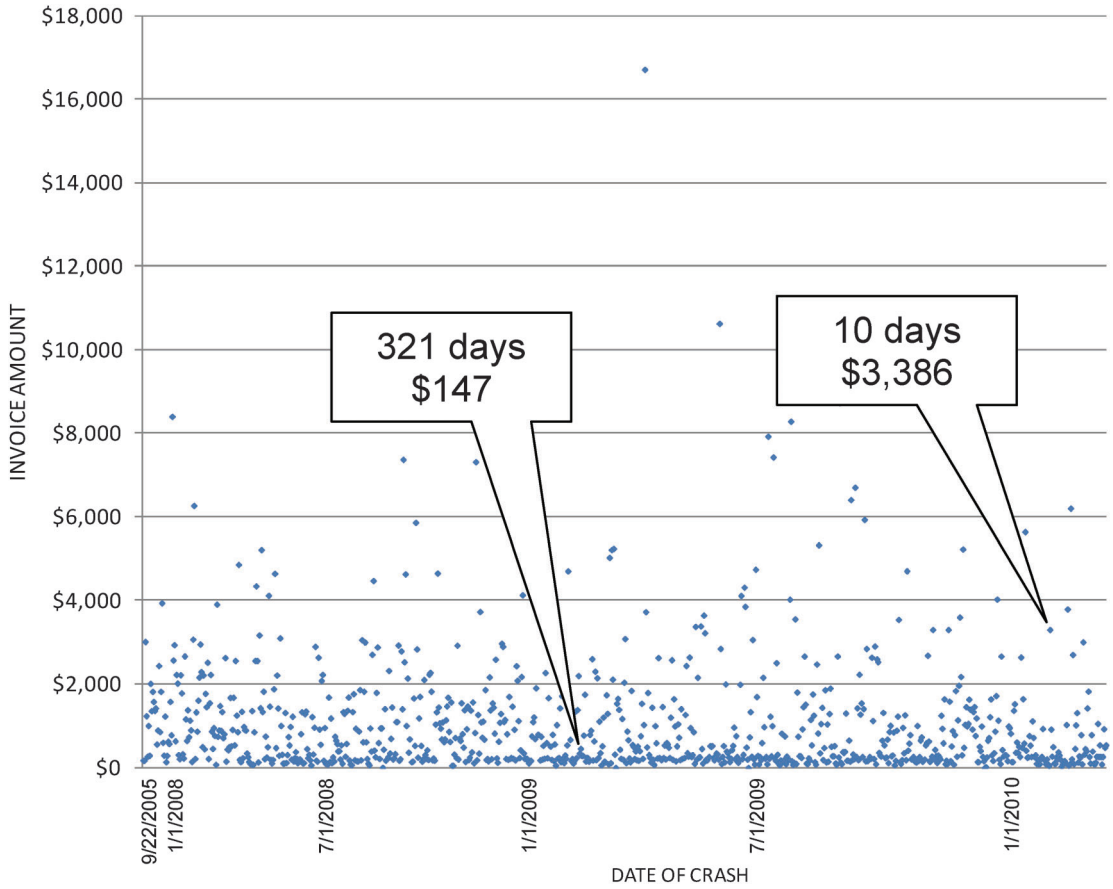
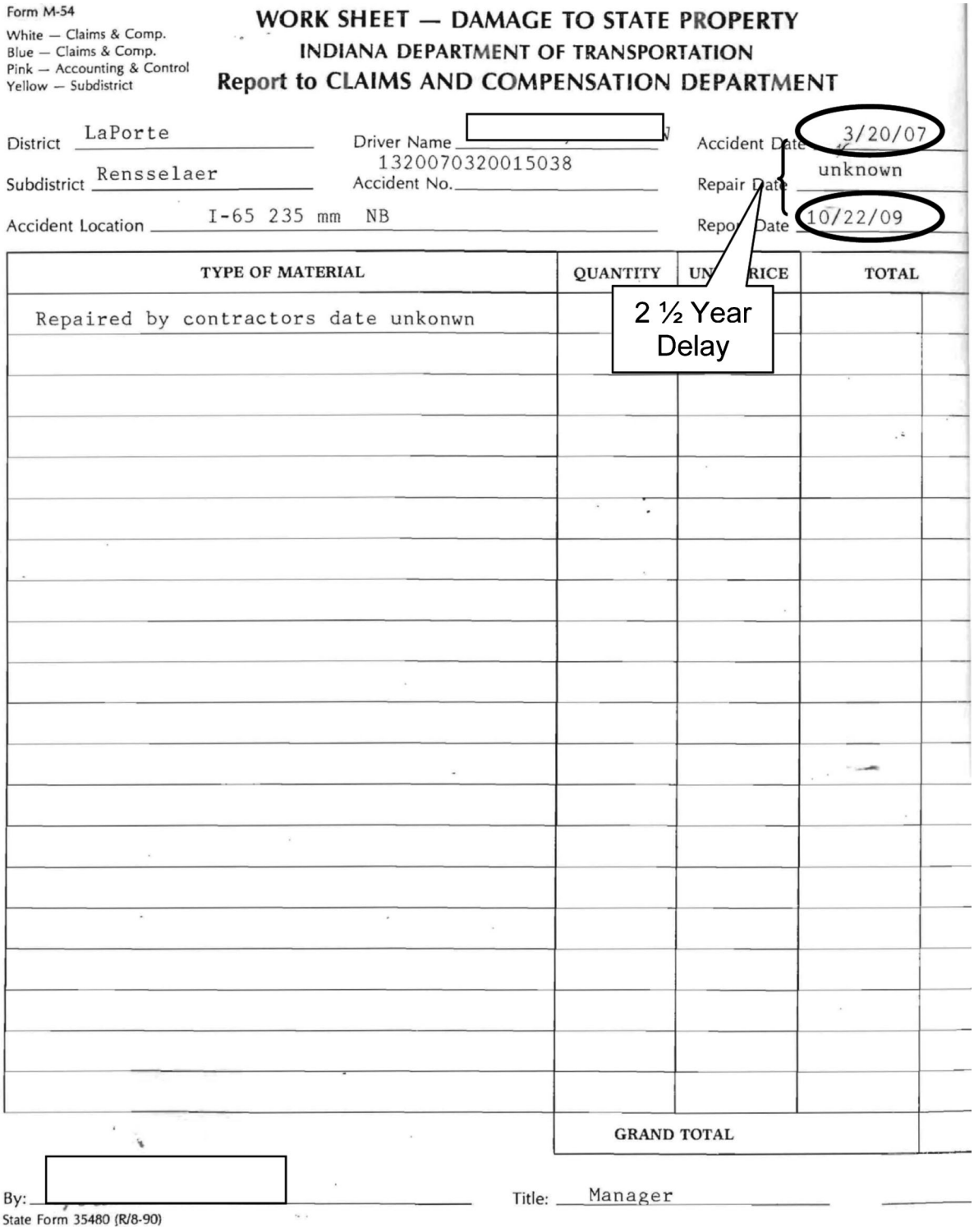


Figure 2.9: Fluctuation of invoice amount with time based on invoices sent in February and March of 2010 (n=919)



Form M-54
White — Claims & Comp.
Blue — Claims & Comp.
Pink — Accounting & Control
Yellow — Subdistrict

WORK SHEET — DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

District LaPorte
Driver Name [redacted]
Accident Date 3/20/07
Subdistrict Rensselaer
1320070320015038
Accident No.
Repair Date unknown
Accident Location I-65 235 mm NB
Repo Date 10/22/09

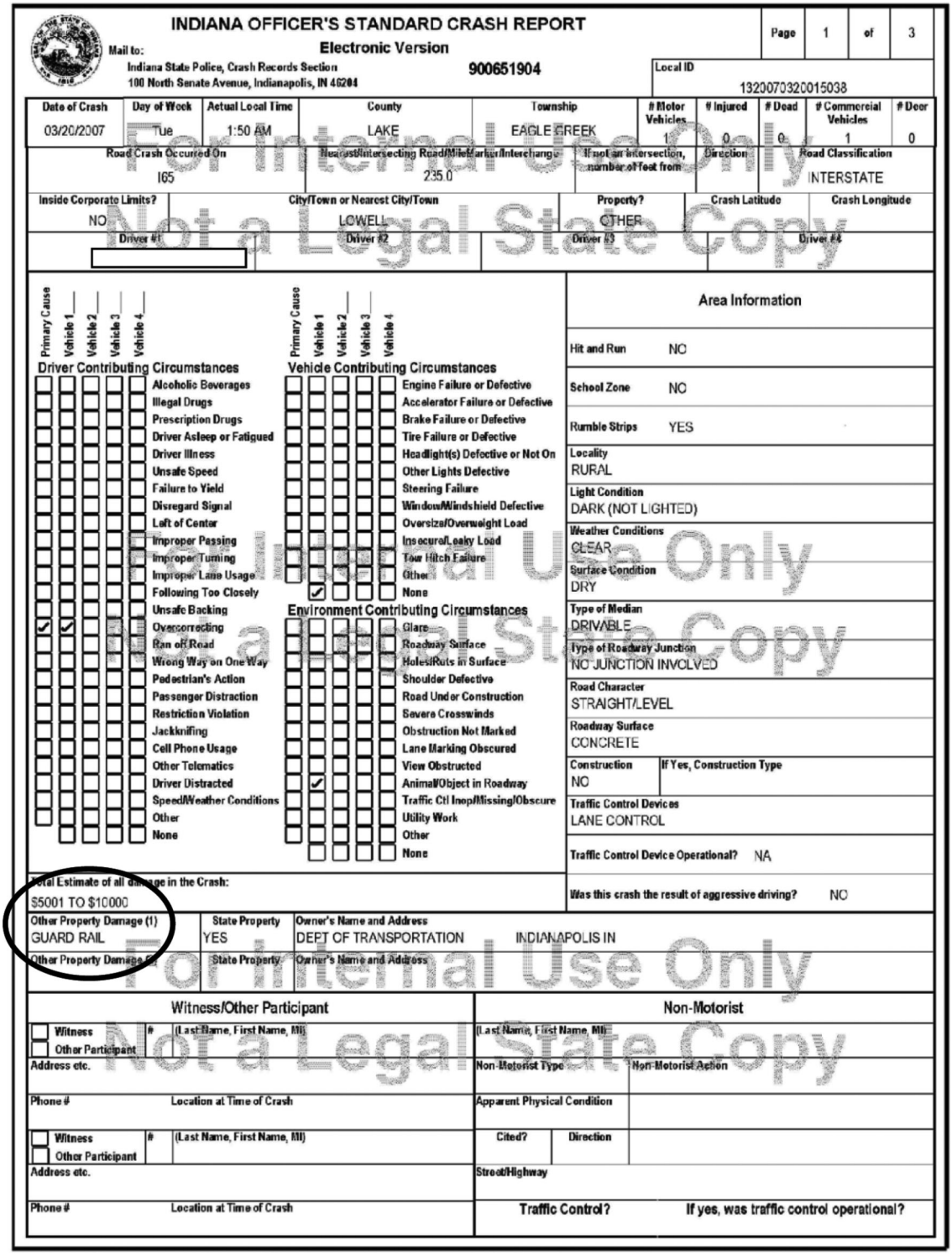
TYPE OF MATERIAL	QUANTITY	UN RICE	TOTAL
Repaired by contractors date unkonwn			
	GRAND TOTAL		

2 ½ Year Delay

By: [redacted]
Title: Manager
State Form 35480 (R/8-90)

Figure 2.10: Example M54 with long delay between crash date and M54 report

report to damage, invoicing, overtime hours from weekend repairs, and collection processes. The costs of these tasks are not included because the labor is not tracked per repair for those tasks, the tasks are not specific to a repair site, or the labor is overlooked. Work that can be itemized to a specific crash site is defensible, easily documented, and generally accepted by parties paying for the DSP. This type of work includes the repair materials, equipment fees, labor cost, and maintenance of traffic. For repairs carried out in-house by INDOT staff, INDOT currently multiplies the repair labor rate by 1.762 in order to account for the



INDIANA OFFICER'S STANDARD CRASH REPORT

Electronic Version

Page 1 of 3

Mail to: Indiana State Police, Crash Records Section, 100 North Senate Avenue, Indianapolis, IN 46204

900651904

Local ID: 1320070320015038

Date of Crash	Day of Week	Actual Local Time	County	Township	# Motor Vehicles	# Injured	# Dead	# Commercial Vehicles	# Deer
03/20/2007	Tue	1:50 AM	LAKE	EAGLE CREEK	1	0	0	1	0

Road Crash Occurred On	Nearest/Intersecting Road/MileMarker/Interchange	If not an intersection, number of feet from	Direction	Road Classification
I65	235.0			INTERSTATE

Inside Corporate Limits?	City/Town or Nearest City/Town	Property?	Crash Latitude	Crash Longitude
NO	LOWELL	OTHER		

Driver #1 | Driver #2 | Driver #3 | Driver #4

Driver Contributing Circumstances (Primary Cause / Vehicle 1 / Vehicle 2 / Vehicle 3 / Vehicle 4)

- Alcoholic Beverages
- Illegal Drugs
- Prescription Drugs
- Driver Asleep or Fatigued
- Driver Illness
- Unsafe Speed
- Failure to Yield
- Disregard Signal
- Left of Center
- Improper Passing
- Improper Turning
- Improper Lane Usage
- Following Too Closely
- Unsafe Backing
- Overcorrecting
- Ran off Road
- Wrong Way on One Way
- Pedestrian's Action
- Passenger Distraction
- Restriction Violation
- Jackknifing
- Cell Phone Usage
- Other Telematics
- Driver Distracted
- Speed/Weather Conditions
- Other
- None

Vehicle Contributing Circumstances (Primary Cause / Vehicle 1 / Vehicle 2 / Vehicle 3 / Vehicle 4)

- Engine Failure or Defective
- Accelerator Failure or Defective
- Brake Failure or Defective
- Tire Failure or Defective
- Headlight(s) Defective or Not On
- Other Lights Defective
- Steering Failure
- Window/Windshield Defective
- Oversize/Overweight Load
- Insecure/Leaky Load
- Tow Hitch Failure
- Other
- None

Environment Contributing Circumstances

- Glare
- Roadway Surface
- Holes/Ruts in Surface
- Shoulder Defective
- Road Under Construction
- Severe Crosswinds
- Obstruction Not Marked
- Lane Marking Obscured
- View Obstructed
- Animal/Object in Roadway
- Traffic Ctl Inop/Missing/Obscure
- Utility Work
- Other
- None

Area Information

Hit and Run	NO
School Zone	NO
Rumble Strips	YES
Locality	RURAL
Light Condition	DARK (NOT LIGHTED)
Weather Conditions	CLEAR
Surface Condition	DRY
Type of Median	DRIVABLE
Type of Roadway Junction	NO JUNCTION INVOLVED
Road Character	STRAIGHT/LEVEL
Roadway Surface	CONCRETE
Construction	NO
If Yes, Construction Type	
Traffic Control Devices	LANE CONTROL
Traffic Control Device Operational?	NA
Was this crash the result of aggressive driving?	NO

Total Estimate of all damage in the Crash: $5001 TO $10000

Other Property Damage (1)	State Property	Owner's Name and Address	
GUARD RAIL	YES	DEPT OF TRANSPORTATION	INDIANAPOLIS IN
Other Property Damage (2)	State Property	Owner's Name and Address	

Witness/Other Participant

Witness / Other Participant # (Last Name, First Name, MI)

Address etc.

Phone # Location at Time of Crash

Witness / Other Participant # (Last Name, First Name, MI)

Address etc.

Phone # Location at Time of Crash

Non-Motorist

(Last Name, First Name, MI)

Non-Motorist Type | Non-Motorist Action

Apparent Physical Condition

Cited? | Direction

Street/Highway

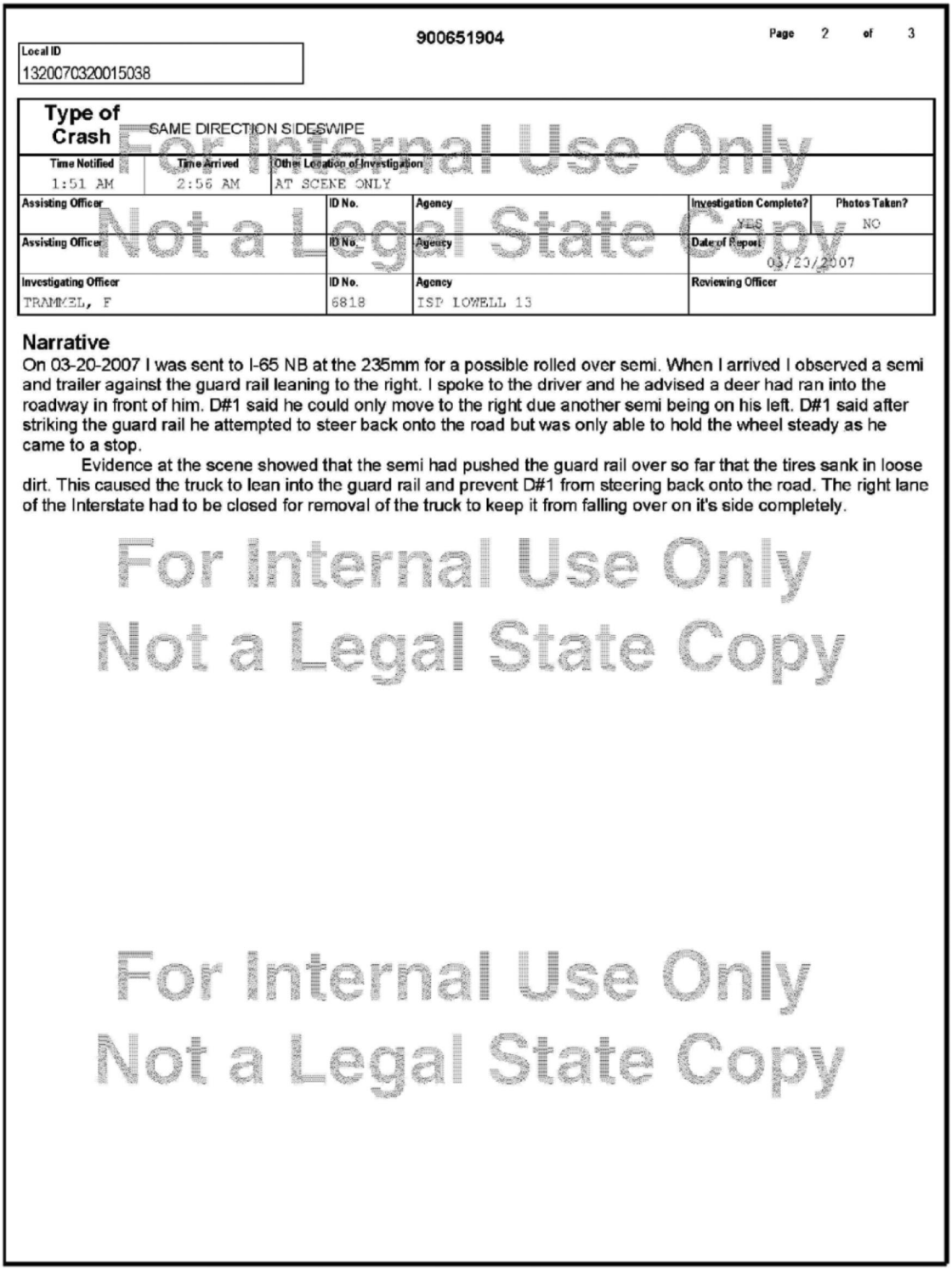
Traffic Control? | If yes, was traffic control operational?

Figure 2.11: M54 crash report #900651904 page 1

benefits of the INDOT employee. Some peer states, such as Michigan, include overhead and administration costs to account for indirect repair costs (see worksheet in Figure 2-17).

In addition to Michigan, the fees invoiced by other peer states are in Table 2.5; the fees vary from 3 – 72%.

The core details of an M54 are the materials, equipment, and labor. Figure 2.18 provides an example of providing little detail of the crash repair. The example correctly documents the contractor line item, but further details would be desirable to document the equipment, labor and material necessary.



900651904

Page 2 of 3

Local ID: 1320070320015038

Type of Crash: SAME DIRECTION SIDESWIPE

Time Notified	Time Arrived	Other Location of Investigation
1:51 AM	2:56 AM	AT SCENE ONLY

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO

Assisting Officer	ID No.	Agency	Date of Report
			03/20/2007

Investigating Officer	ID No.	Agency	Reviewing Officer
TRAMMEL, F	6818	ISP LOWELL 13	

Narrative

On 03-20-2007 I was sent to I-65 NB at the 235mm for a possible rolled over semi. When I arrived I observed a semi and trailer against the guard rail leaning to the right. I spoke to the driver and he advised a deer had ran into the roadway in front of him. D#1 said he could only move to the right due another semi being on his left. D#1 said after striking the guard rail he attempted to steer back onto the road but was only able to hold the wheel steady as he came to a stop.

Evidence at the scene showed that the semi had pushed the guard rail over so far that the tires sank in loose dirt. This caused the truck to lean into the guard rail and prevent D#1 from steering back onto the road. The right lane of the Interstate had to be closed for removal of the truck to keep it from falling over on it's side completely.

Figure 2.12: M54 crash report #900651904 page 2

2.6. Conclusions

This chapter described the challenges faced in addressing the study objectives. The crash repair recovery process is often delayed in both the M54 and invoice processes. Obstacles to associating crash reports to DSP include the delay in querying the database after the crash occurs and the multiplicity of crashes happening within close proximity of each other. Additional challenges are that the crash database filter criteria restrict the crash reports to be matched to DSP, and the fully-loaded repair costs aren't accounted. Opportunities to address these challenges are discussed in Chapter 5.

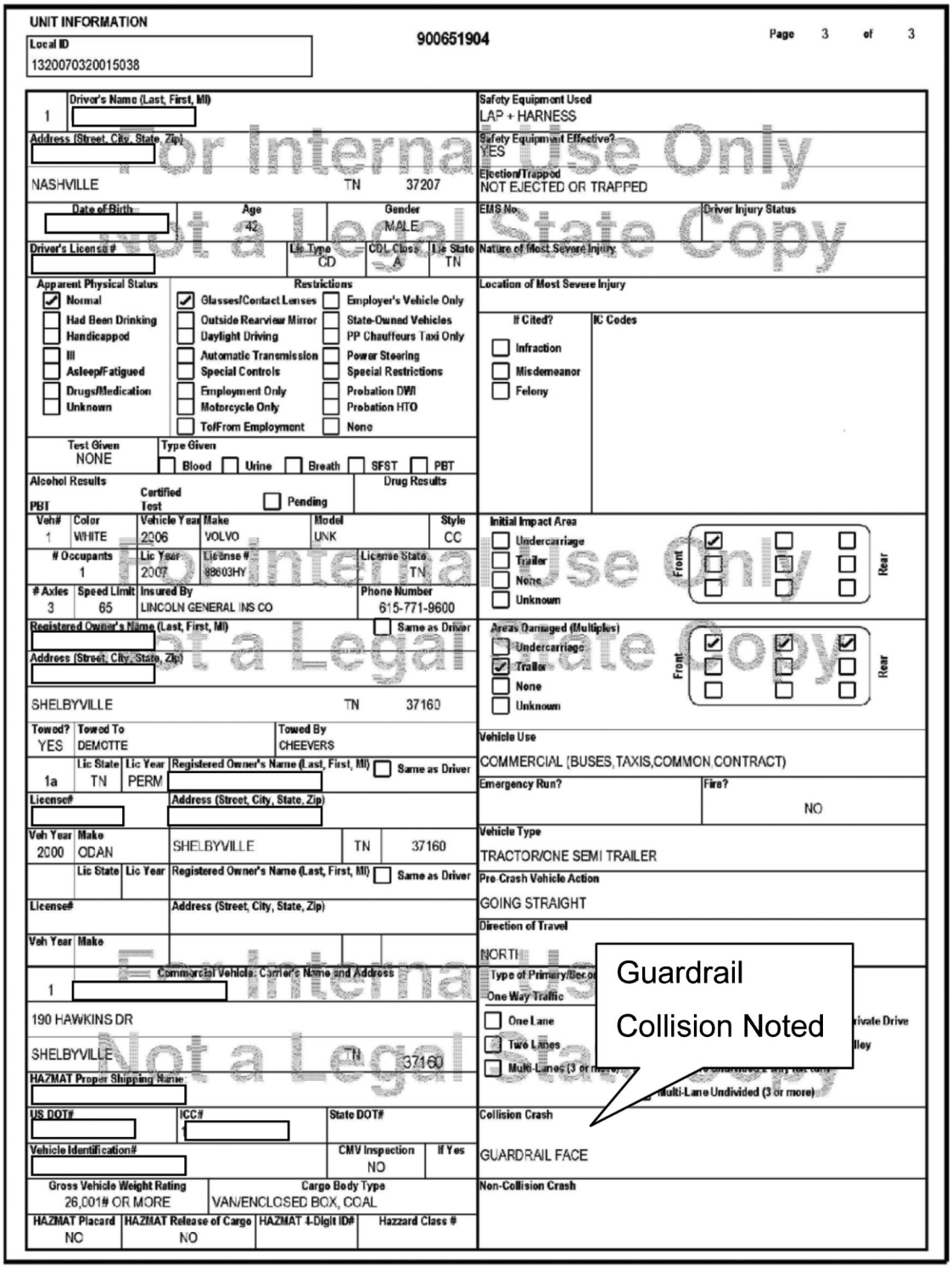


Figure 2.13: M54 crash report #900651904 page 3

CHAPTER 3. BACKGROUND AND HISTORY OF THE INDIANA CRASH DOCUMENTATION AND DSP COST RECOVERY PROCESS

Indiana has a crash documentation process that varies for each INDOT district. Also the state has an invoicing and collections process managed through the INDOT central office. Each district has developed methods of searching crash reports and recording repairs. This chapter describes INDOT's current processes and establishes a preliminary list of performance measures for evaluation such as

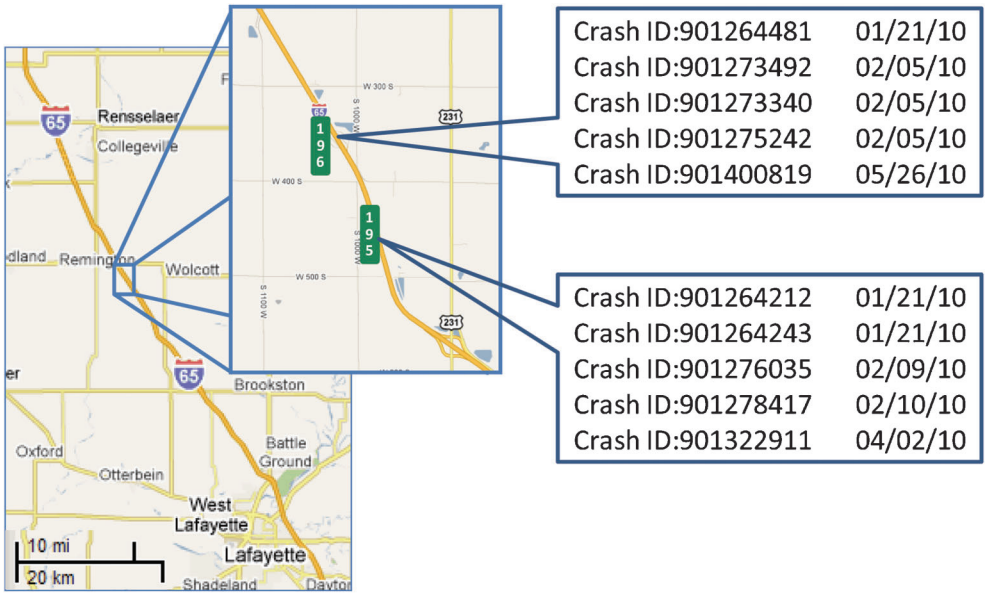


Figure 2.14: Multiple cable-median barrier crashes within close proximity

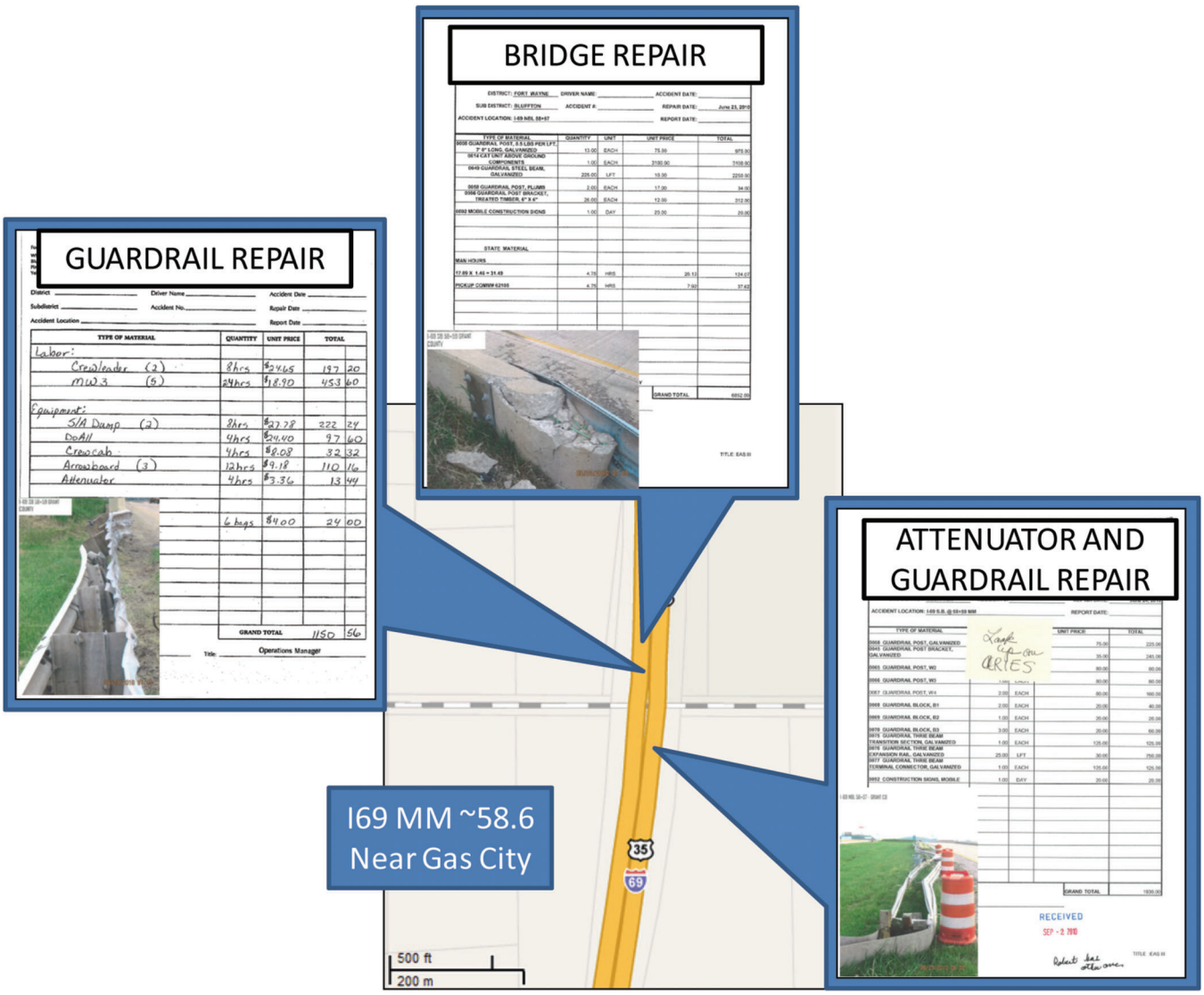


Figure 2.15: Multiple M54s for one crash at I69 MM ~58.6

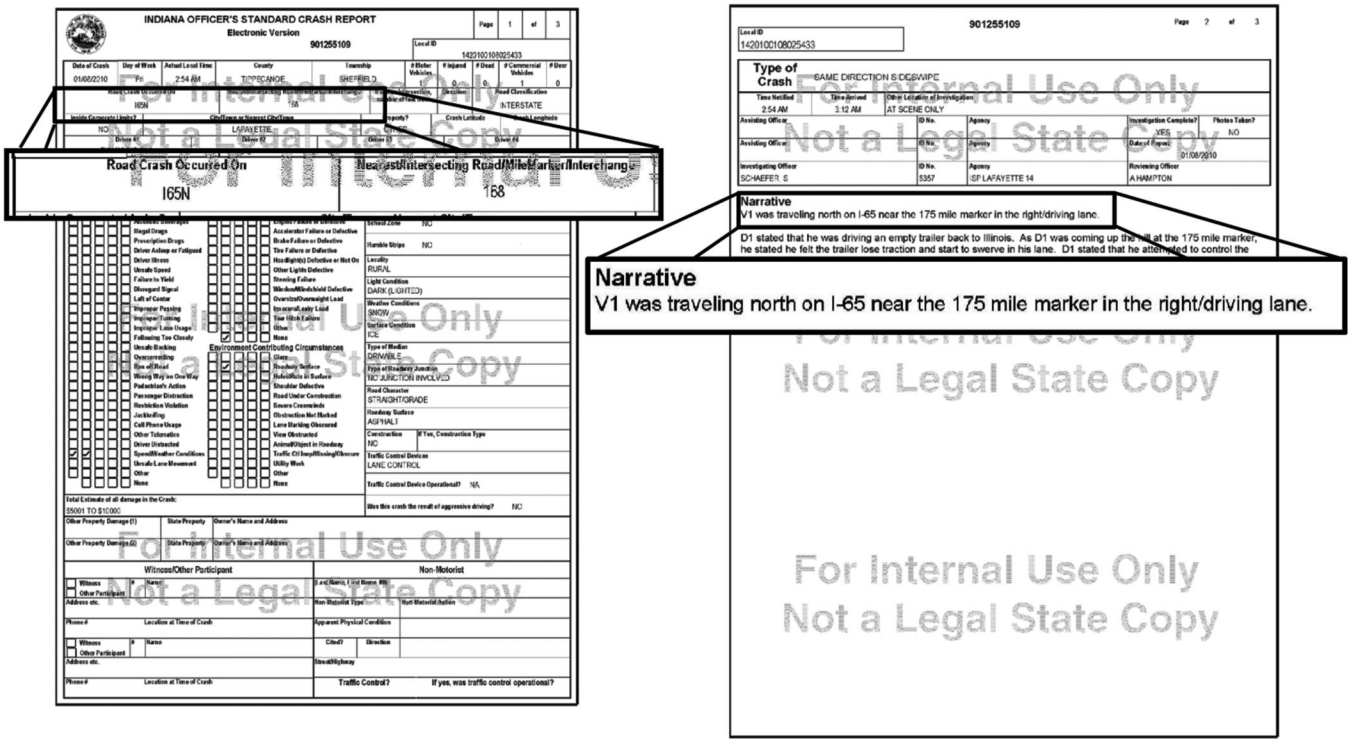


Figure 2.16: Example of crash report with contradicting mile-marker information

- time duration between the crash and the M54 completion date
- time duration between the M54 and the invoice date
- total dollar amount invoiced vs. total collected
- distribution of time invoiced aged receivables

The performance measures indicate trends, strengths, and weaknesses of the current processes and practices.

3.1. Data Sources

The data used in this report was obtained from a number of sources (Table 3.1). In 2007, the INDOT central office began using PeopleSoft, a computer software package to log the invoice balances and collections. In the course of the study, there were modifications to the data recorded in the PeopleSoft system. For instance, the invoices sent from February 22, 2010 to March 3, 2010 were enhanced to include data such as the INDOT district where the crash occurred, the crash date, and the M54 date. The additional information was included by INDOT central staff to evaluate the processes, but was not available previously.

The INDOT traffic management center (TMC) staff ran two queries from the state crash database. One query focused on identifying crash reports that left the state property indicator box empty, but indicated the vehicle collided with the guardrail face, bridgerail, guardrail end, median barrier, etc. The other query listed all the insurance information for crash reports with the state property indicator marked "Yes"; the insurance information was not listed in the previous query. This study analyzed these data sources with additional data from surveys of other states, field observations, querying the ARIES[1] database, or special requests to districts.

TABLE 2.5:
Overhead or administration fees in peer states

State	Overhead or Administration Fee
Hawaii	65%
Michigan	28.7%
Ohio	15%
South Dakota	8.6%
Texas	3 - 5.86%
Wisconsin	4%
Louisiana	10%
Nebraska	72%
Kansas	30.4%

3.2. Current INDOT Practices

INDOT districts have different processes to document crash damage and recover repair costs. This study performed a detailed investigation of the procedures and practices in the Crawfordsville and Fort Wayne districts, and the Indianapolis sub-district. The districts/sub-district's role in the crash repair recovery process is to document the crash damage, associate the damage to a specific crash report, and document the repair costs. The INDOT central office converts the M54 into an invoice and pursues collection statewide. This is discussed in Section 3.2.4 of this report.

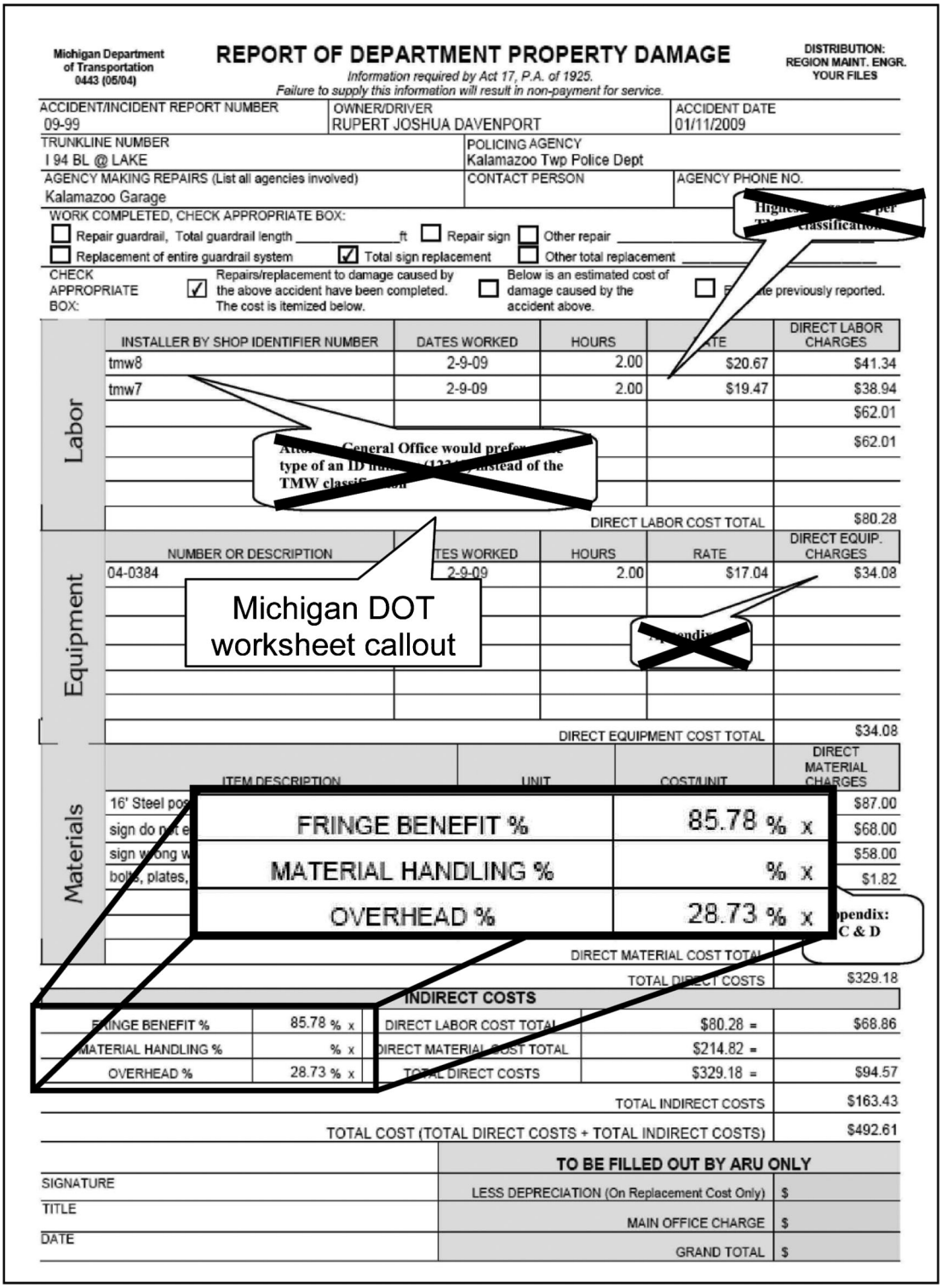
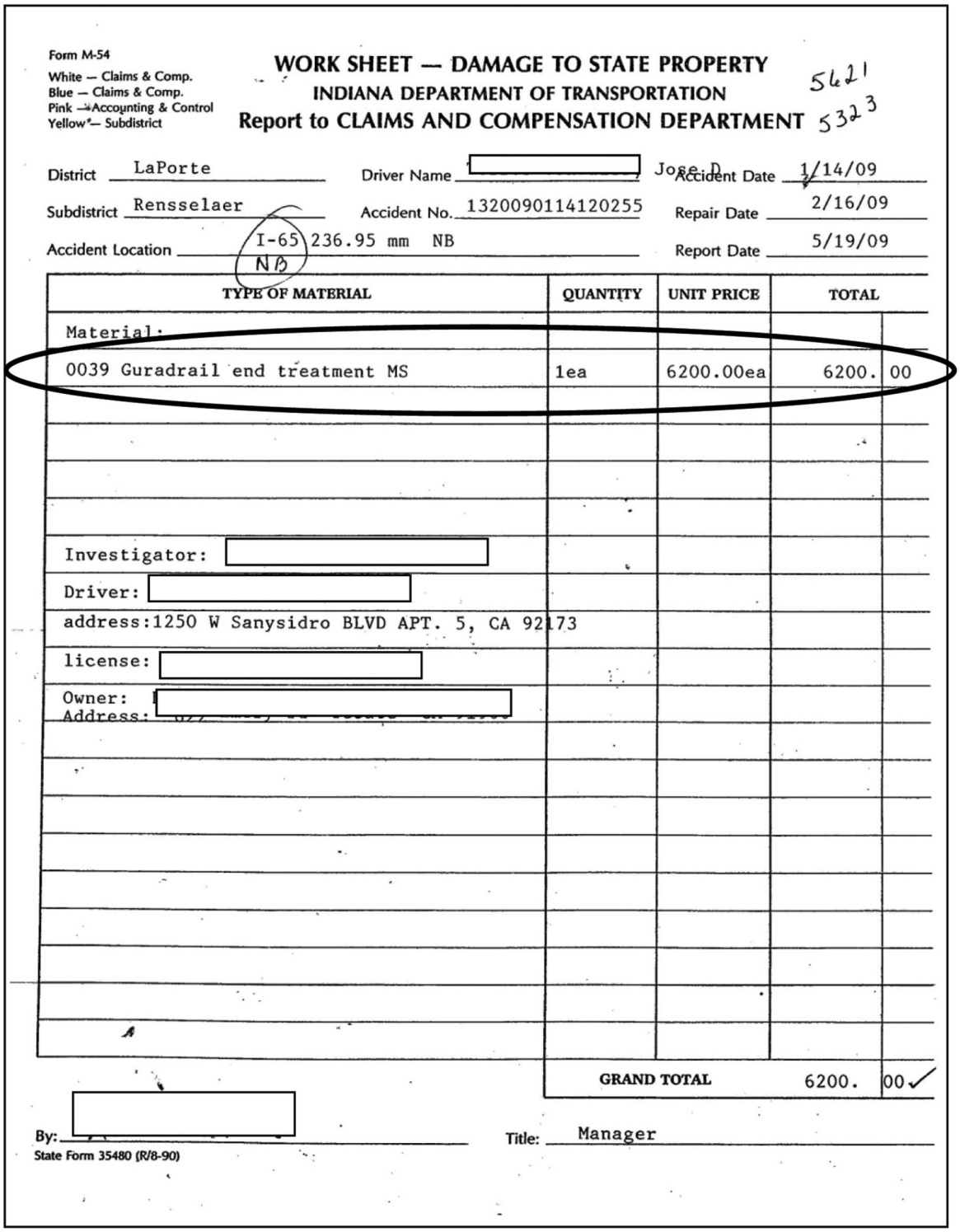


Figure 2.17: Example Michigan repair costing worksheet

3.2.1. Crawfordsville District Process

The Crawfordsville district starts the crash repair cost recovery process with a crash database query for its counties. Figure 3.1 illustrates the general process. The roadways in the query that are not within district boundaries are disregarded. The district queries the database approximately monthly and distributes the crash reports to the appropriate sub-districts for field investigation; an example of the query is shown in Figure 3.2. The crash query filters crash reports using the "state property indicator" field.



Form M-54
White — Claims & Comp.
Blue — Claims & Comp.
Pink — Accounting & Control
Yellow — Subdistrict

WORK SHEET — DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

5621
5323

District LaPorte Driver Name [redacted] Jose D Accident Date 1/14/09
Subdistrict Rensselaer Accident No. 1320090114120255 Repair Date 2/16/09
Accident Location I-65 236.95 mm NB NB Report Date 5/19/09

TYPE OF MATERIAL	QUANTITY	UNIT PRICE	TOTAL
Material:			
0039 Guradrail end treatment MS	1ea	6200.00ea	6200. 00
Investigator: [redacted]			
Driver: [redacted]			
address:1250 W Sanysidro BLVD APT. 5, CA 92173			
license: [redacted]			
Owner: [redacted] Address: [redacted]			
GRAND TOTAL			6200. 00 ✓

By: [redacted] Title: Manager

State Form 35480 (R/8-90)

Figure 2.18: Example of inadequate repair information on the M54

Before a crash report arrives at the sub-district, maintenance crews sometimes identify damage and repair it. In these cases, the sub-district records the labor, materials, and equipment in an attenuator log that will be matched to the crash report when the crash report arrives from the district. If it is decided that the damage cannot be repaired in-house, a contractor is selected to carry out the repair and the repair is duly supervised by INDOT personnel. The labor, material, and equipment rates are taken from the work management system (WMS) with the 1.762 labor multiplier applied to the labor rates. The forms used are shown in

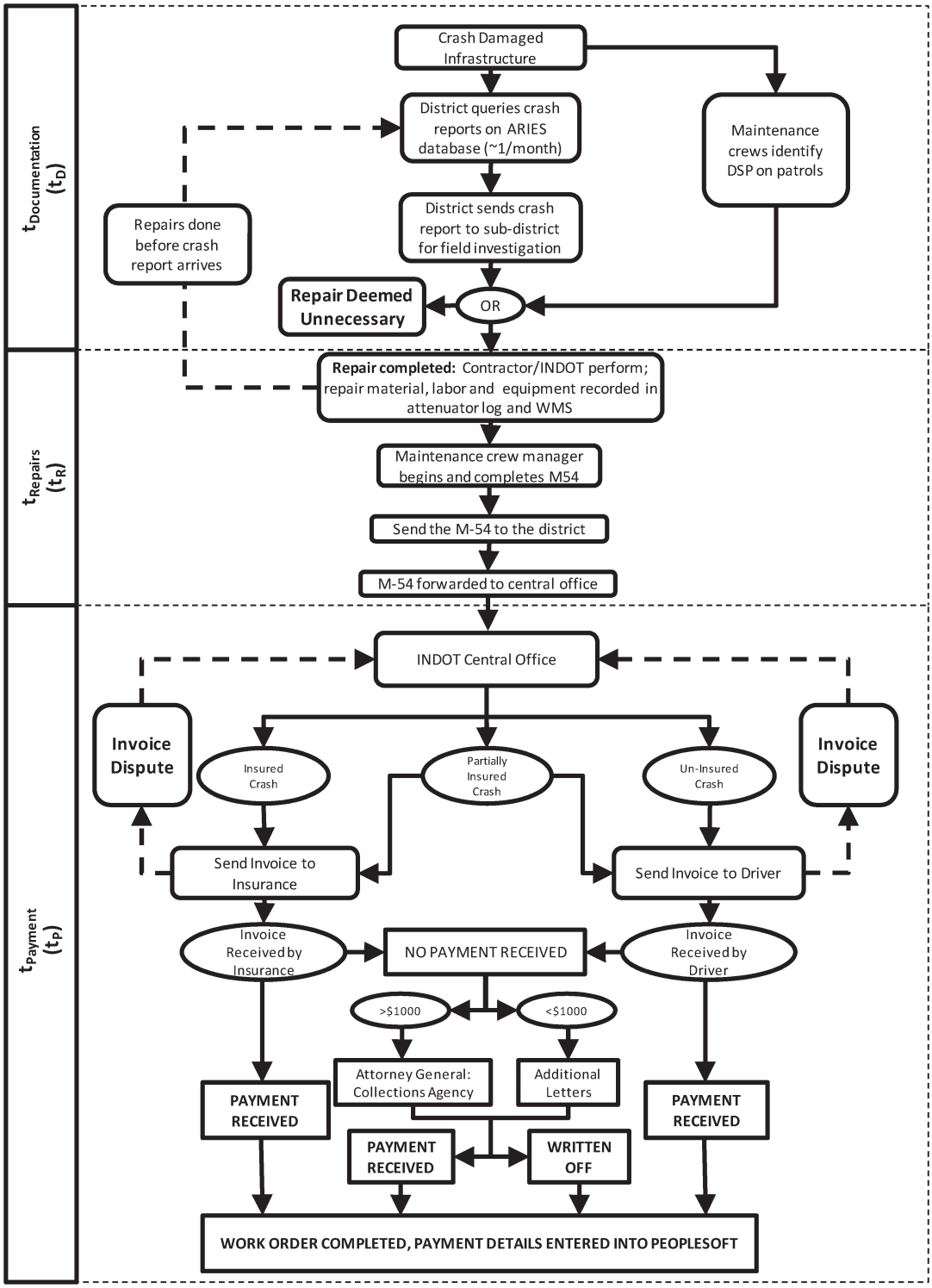


Figure 3.1: General Crawfordsville crash repair reimbursement process

Section 3.4 of this report. The M54, now complete with the repair costs, has the crash report attached and sent back to the district office and forwarded to the INDOT central office.

3.2.2. Fort Wayne District Process

The Fort Wayne district process begins with the maintenance crews. The unit foreman is supplied with a camera to document DSP and asses repairs. The photos are included with the M54 documents sent to the

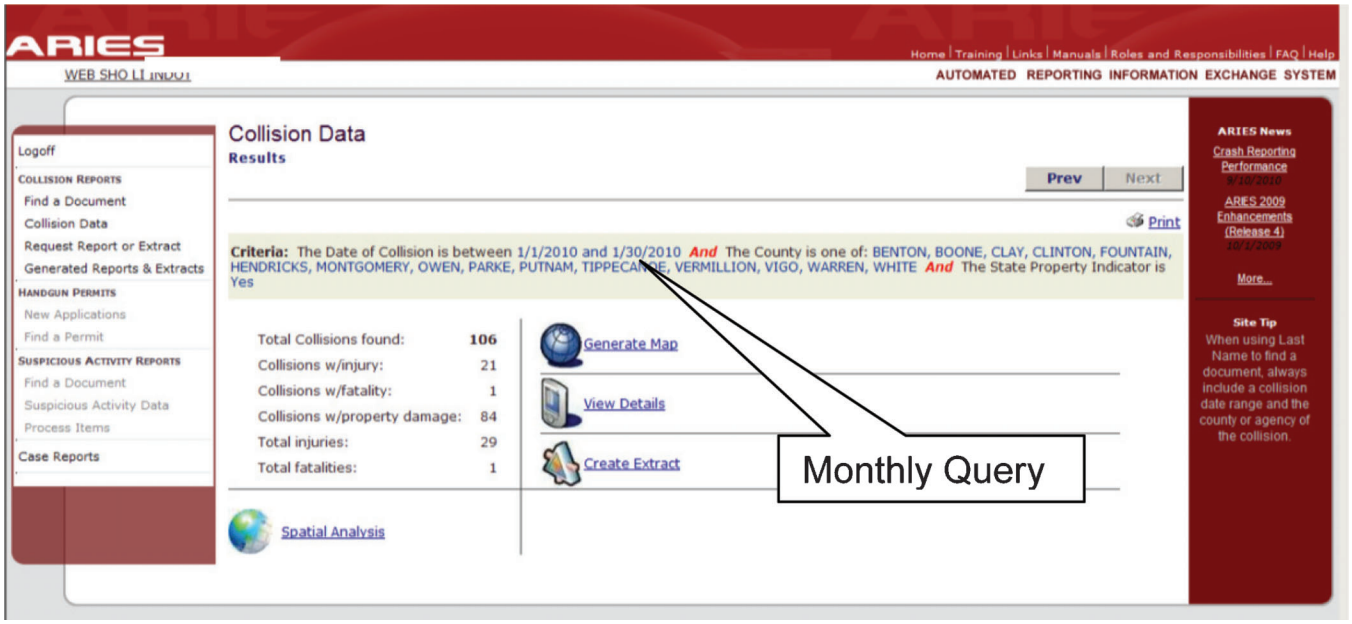


Figure 3.2: Monthly query by Crawfordsville district

TABLE 3.1:
Data Sources for Figures and Statistics

	Description	Source	Time Period
1	PeopleSoft Accounting Log	INDOT Central Office	Invoices Sent 6/30/1999 – 3/17/2010
2	PeopleSoft Accounting Log: District Categorized	INDOT Central Office	Invoices Sent 2/22/2010 – 3/3/2010
3	SQL Database of Indiana Crashes: Driver Insurance Information	Traffic Management Center	1/1/2010 – 8/10/2010
4	SQL Database of Indiana Crashes: State Property Information	Traffic Management Center	1/1/2010 – 4/10/2010

INDOT central office. Figure 3.3 provides example pictures from the Fort Wayne district of a crash site with DSP. The first photo shows the DSP prior to repair and includes a timestamp which helps narrow the crash query time range. The second photo provides visual evidence of the labor and equipment necessary to repair the DSP. The third photo illustrates the repaired condition of the state property in contrast to the first photo.

The M54s are completed by maintenance crews prior to receiving a crash report. The crash report is searched after the repair is done and the M54 is received. The district crash report query uses the counties of the crash site, date range, and state property indicator to search the crash site. In cases of larger guardrail or attenuator crashes, a contractor repairs the DSP as directed by INDOT district personnel.

3.2.3. Indianapolis Sub-district Process

The Indianapolis sub-district is unique from other sub-districts because its jurisdiction covers an entire county (Marion). The roadways in this county have high traffic volumes and a significant amount of state-owned infrastructure. The sub-district secretary queries the crash database a few times each week for the past week's time range to allow a crash report to be entered into the database. The crash database query criteria only includes Marion County and date range. Such a query results in several crash reports to read as shown in Figure 3.4.

The secretary views the roadway details from the query results (Figure 3.5), and selects only INDOT roadways (interstates, state highway, and US routes) to access. In the example, this step reduces the crash reports from 605 to 135. The secretary then reads the crash narrative and other details to determine if the crash site merits a field investigation for DSP. An example of a crash report narrative is presented in Figure 3.6.

The Indianapolis sub-district's perspective differs from a district's because its scope of responsibility is narrower. The number of crashes reviewed each week decreases in the summer months, but is still extensive. The volume of crash reports for a district to review makes this type of query effort very difficult to scale statewide.

3.2.4. Cost Recovery Process Practices

The crash repair cost recovery process continues with the INDOT central office after crash documentation is completed for invoices and collections. After receiving the M54s from the districts, the INDOT central office

a) Crash damage before repair

b) Repair Activity showing labor and equipment

c) Repaired crash attenuator

Figure 3.3: Example of crash damage and repair photo documentation with time stamp

records the driver's information and repair details into PeopleSoft. The recovery process continues as follows:

- The driver is sent an invoice and if requested, the driver's insurance company.

- the INDOT central office negotiates with drivers and insurance companies for invoice disputes.

- If there is no payment within 90 days and the repair amount is

- over $1000, then the account is sent to the Attorney General who files a suit or employs a collections agency to pursue the amount.
- under $1,000, then INDOT central office continues to send the driver additional letters.

- The Attorney General notifies the INDOT central office when they have collected on an account.

- The invoice and collections records are stored and updated in PeopleSoft.

The collections are deposited in the state highway general fund.

3.3. Indiana Crash Repair Cost Recovery Performance Measures

The practices and processes of each district can be evaluated by performance measures such as

- duration time between the date of crash (DOC) and M54 date
- duration time between the M54 date and the invoice date.
- Invoice and collection amount comparison (yield percentage)
- Aged receivable distribution

Figure 3.7 combines the first two performance measures. The duration time from the M54 date to the invoice should be similar on any calendar date because the INDOT central office processes the invoices for all districts; however there is variability in forwarding the M54 from the repair crews to the INDOT central office. For instance, Fort Wayne district has the crash reports searched once the M54 is completed, while Crawfordsville wait to begin the M54 after the crash report has been associated to the damage. In Fowler sub-district, the attenuator log is filed until a crash report arrives from district to associate to the crash. The attenuator log sheets have a damage report field that indicates when the damage was first sited. Figure 3.8, Figure 3.9, and Figure 3.10 separate the invoice count by when the crash date, M54 date, and invoice date are recorded. The districts had varying backlogs of invoices for each time period. It was observed that Greenfield had the largest sample of invoices (322) and the majority of the crashes occurred in the past six months. This hints that their system is current processing the crashes with DSP. The second highest sample was in the Fort Wayne district; the graphs show the majority of their invoices were from crashes in 2008. The Crawfordsville and Vincennes District sent the fewest invoices, 74 and 85 respectively, in this time period (2/22/2010 – 3/3/2010).

One detail noteworthy by its absence is a missing expected spike in invoices sent for crash dates in the winter months (December, January, and February); this trend is only seen in the Fort Wayne and Greenfield districts in Figure 3.8. The INDOT central office has either invoiced the crashes from the winter season already or the M54s/invoices were being prepared when the data was received. These figures on a sub-district, district, and statewide level guide the crash repair cost recovery managers to evaluate the progress of each step of the process. The data used to generate the previously mention figures is limited to one group of invoices. This skews the graphs to show less processing time for recent months because delayed M54s for that time period have not yet been received. A sample size for a longer time

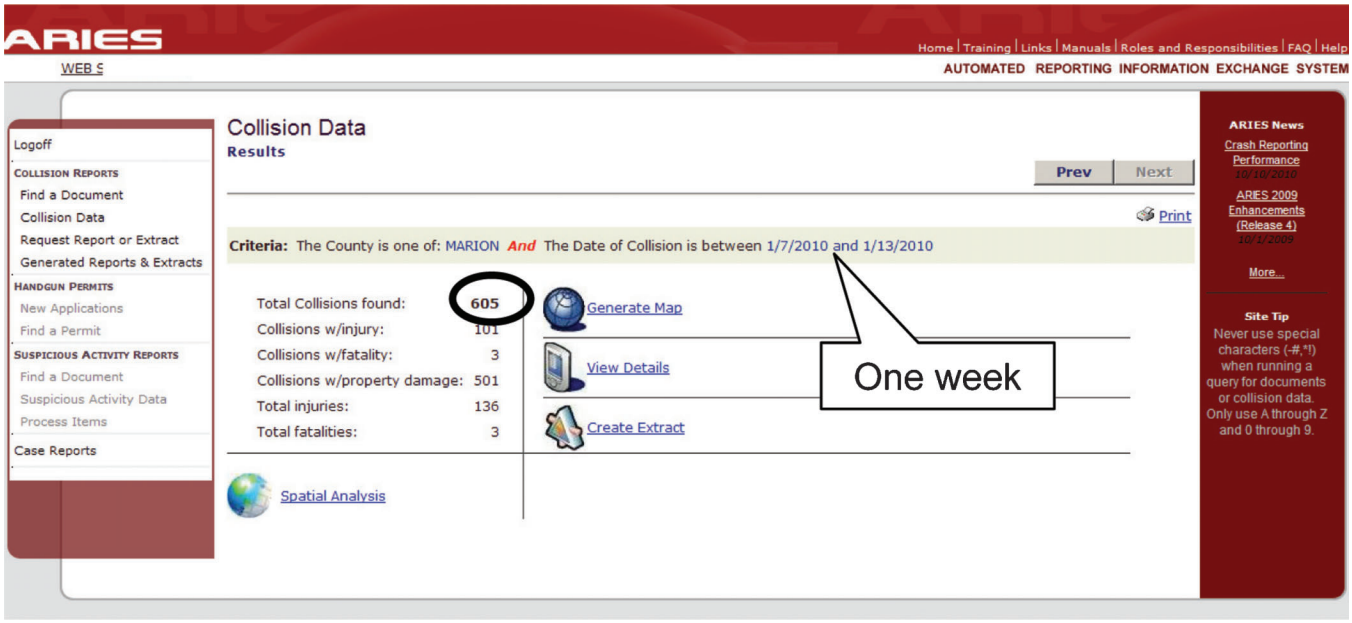


Figure 3.4: ARIES crash database query web interface

		MASTER RECORD NUMBER	COLLISION DATE	LOCAL CODE	AGENCY	COUNTY	PRIMARY FACTOR	ROADWAY	NUMBER DEAD	NUMBER INJURED
view	buy	901259333	1/7/2010	I100071654	INDPLS METRO PD	MARION	UNSAFE BACKING	BRENHAVEN CT	0	0
view	buy	901255825	1/7/2010	5220100107115822	ISP INDIANAPOLIS 52	MARION	SPEED TOO FAST FOR WEATHER CONDITIONS	I70E	0	1
view	buy	901257063	1/7/2010	I100071400	INDPLS METRO PD	MARION	RAN OFF ROAD RIGHT	10TH ST	0	0
view	buy	901257110	1/7/2010	I100070414	INDPLS METRO PD	MARION	ROADWAY SURFACE CONDITION	W 56TH ST	0	0
view	buy	901257114	1/7/2010	I100070458	INDPLS METRO PD	MARION	RAN OFF ROAD RIGHT	E 46TH ST	0	0
view	buy	901257115	1/7/2010	I100070657	INDPLS METRO PD	MARION	ROADWAY SURFACE CONDITION	KENTUCKY AVE	0	0
view	buy	901259358	1/7/2010	5220100107131003	ISP GHQ 99	MARION	UNSAFE SPEED	I465S	0	0
view	buy	901259732	1/7/2010	100113	LAWRENCE PD	MARION	ROADWAY SURFACE CONDITION	US36E	0	0
view	buy	901254905	1/7/2010	5220100107130802	ISP INDIANAPOLIS 52	MARION	OVERCORRECTING/OVERSTEERING	I465E	0	0
view	buy	901259730	1/7/2010	100111	LAWRENCE PD	MARION	RAN OFF ROAD RIGHT	SUNNYSIDE RD	0	1
view	buy	901254942	1/7/2010	5220100107074313	ISP GHQ 99	MARION	OTHER (ENVIRONMENTAL) - EXPLAIN IN NARR	SR37N	0	0
view	buy	901259824	1/7/2010	5220100107132210	ISP INDIANAPOLIS 52	MARION	SPEED TOO FAST FOR WEATHER CONDITIONS	I70E	0	0

Figure 3.5: ARIES crash database preliminary view of each crash (12 shown of 605)

Narrative

Drive 1 states that she was traveling eastbound on I 465, near the 4.6 mile marker. Driver 1 states that while traveling in the far right lane, she began to lose control of vehicle due to the snowing weather and snow build up on the interstate. Vehicle 1 then traveled onto the right shoulder of eastbound I 465, then striking the barrier wall. This cause no damage to the barrier wall, but did cause damage to the right rear of vehicle 1, and causing the right rear tire to become separated from vehicle 1. Vehicle 1 and the right rear tire came to rest on the right shoulder. Driver 1 and passenger had no complaints of pain.

Figure 3.6: Crash report narrative

range is needed to give an accurate portrayal of true M54 processing time.

Additional data was received towards the end of this report that does show improved processing time, although M54s are still arriving for recent months. Figures. 3.7 – 3.10 can be compared to Figures 3.11 – 3.14 to compare performance. Greenfield continues to show a high invoice count amount (551).

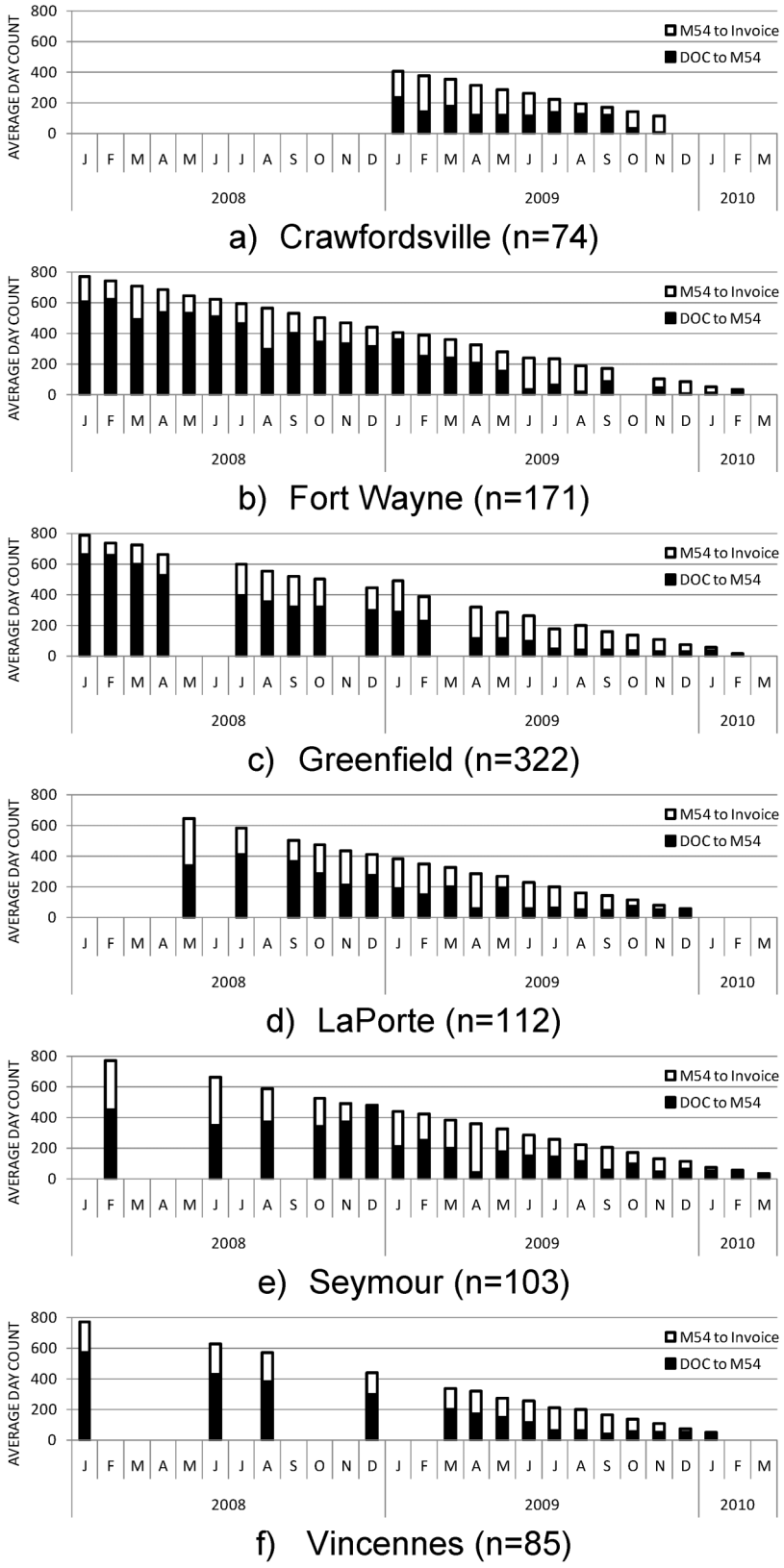


Figure 3.7: Average number of days between crash date and invoice categorized by crash date (invoices sent between 2/22/2010 – 3/3/2010)

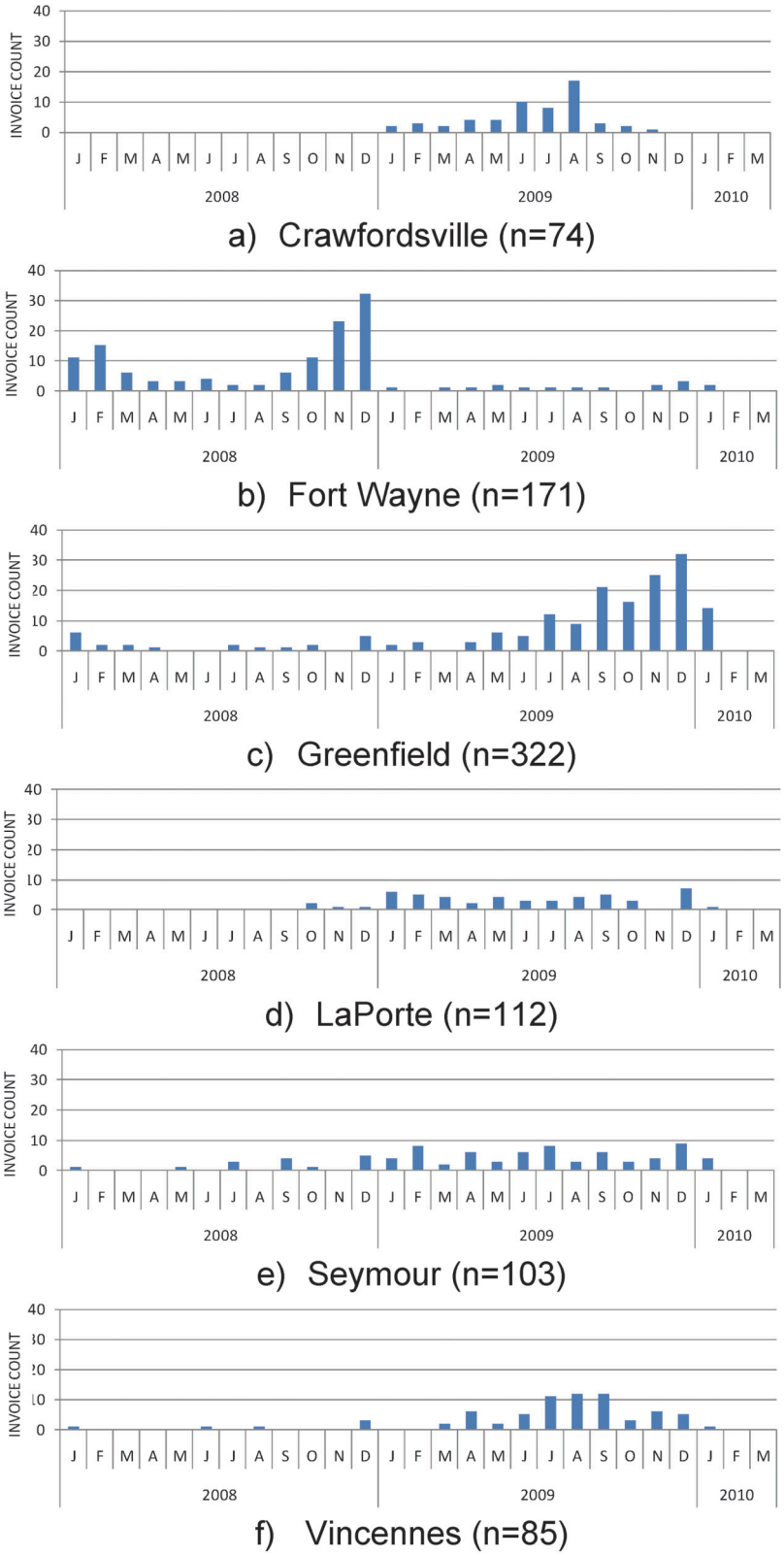


Figure 3.8: Count of invoices categorized by crash date (invoices sent between 2/22/2010 – 3/3/2010)

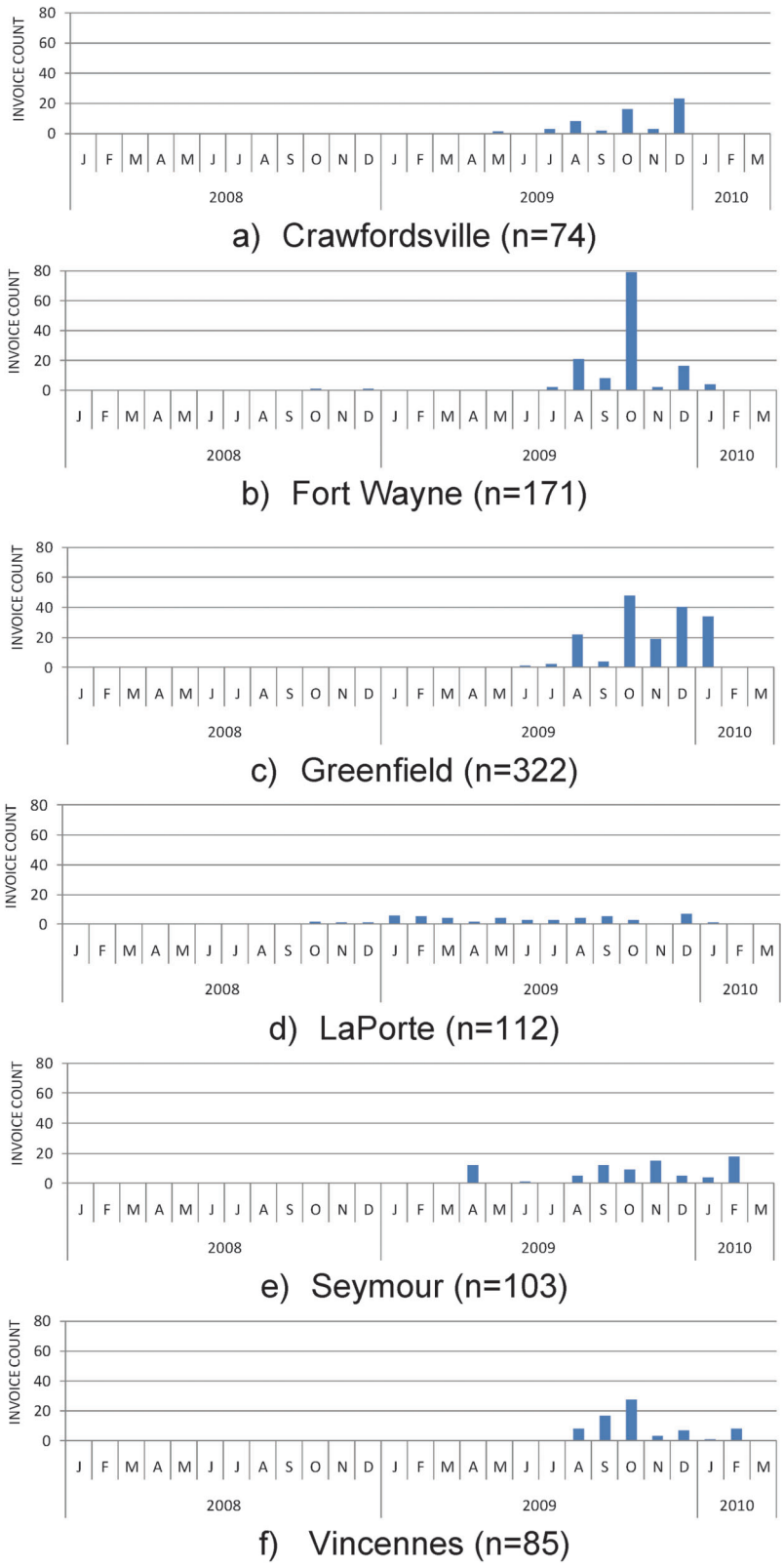


Figure 3.9: Count of invoices categorized by M54 date (invoices sent between 2/22/2010 – 3/3/2010)

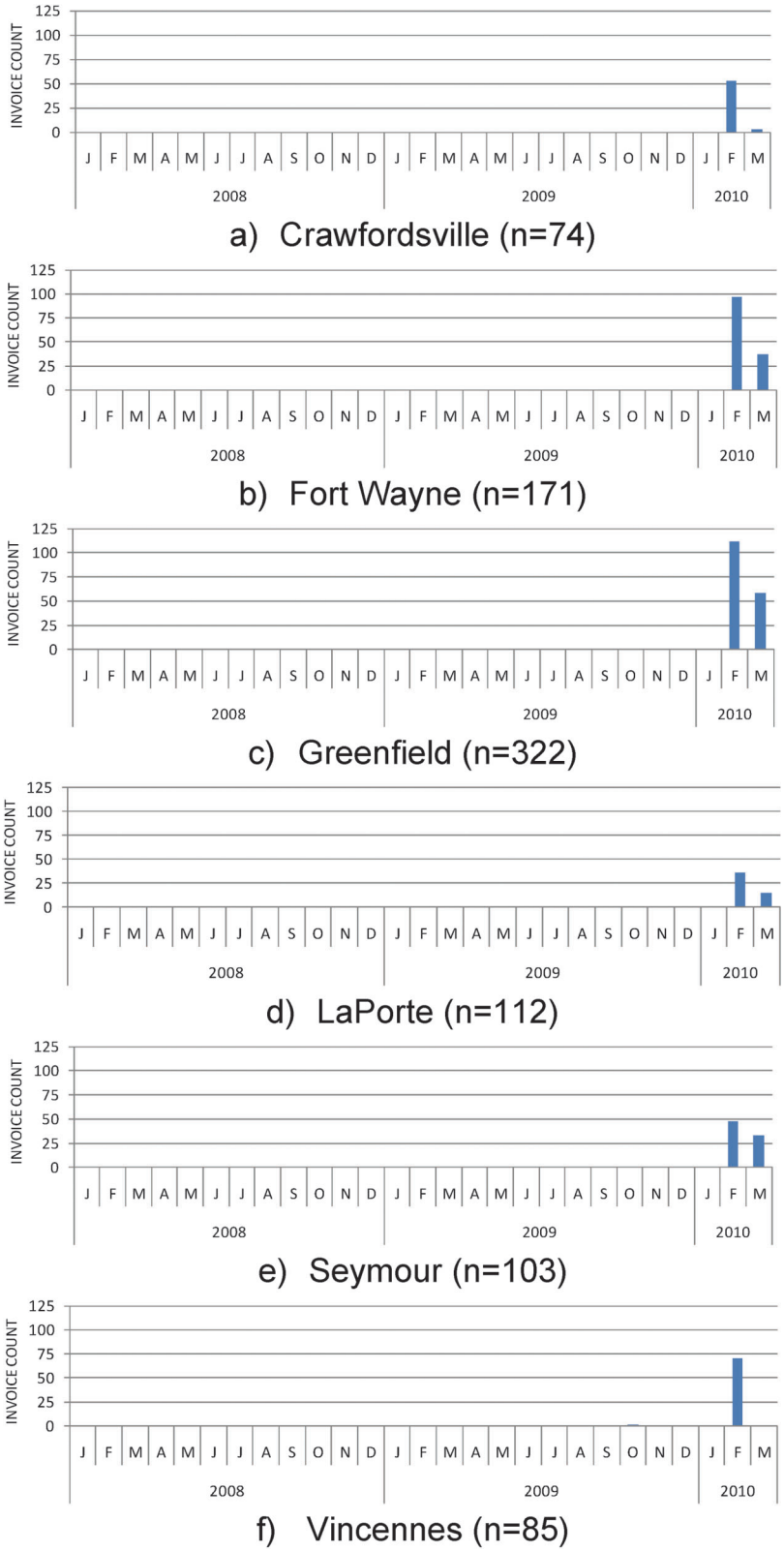


Figure 3.10: Count of invoices categorized by invoice date (invoices sent between 2/22/2010 – 3/3/2010)

3.3.1. Collections Record

The state property damaged can vary from a small traffic sign to an entire bridge. As such, the value of the damage varies greatly. Figure 3.11 demonstrates that ~10% of the repairs are over $2,538 and 50% are below $419; the figure has the invoices ranked by amount. An invoice of $419 or less is typical for a few posts of cable-median barrier, a few signs, minor guardrail dent, or other quick replacements. The invoices in the top 10% of cost repair account for 56% of the total invoice amount. Excluding the $695,000 repair due to a crane collision with a bridge, the top 10% cost repairs are observed to account for 51% of the total invoice amount.

The collections record was shown in Figure 2.6 of Chapter 2, and the overall collection amount average is approximately 51% of the invoice amount for 2008 and 2009. Excluding collection amount months with collections lower than $10,000, the monthly average is approximately 60%.

The responsible parties have a high probability of owning insurance as shown in Figure 3.16. The TMC query about the driver's insurance company does not include the possibility of the driver providing incorrect or out-of-date insurance information at the time of the crash.

3.3.2. Invoicing and Collection Patterns

It is difficult to determine trends in invoice volume from only two years of invoice data. From Figure 3.17, there does not appear to be any seasonal patterns, only sporadic bursts throughout the years. The only exceptions could be, October and April, which show a consistently higher volume than other months and December is consistently low. There are months that show few invoices sent for the entire month; such as February 2008 (2), September 2009 (1), and January 2010 (9). This study brought focus on the crash repair cost recovery process, and significant improvements occurred in February and March 2010. The number of invoices sent during this time, 889, is over 60% of the 1444 billed in 2009.

Most collections are received within 30 days after they are sent. Figure 3.18 shows that 551 collections occurred within 30 days of the invoice for year 2008, equaling 58% of the total collection claims. The median collection time for invoices is 41 days even though no early payment incentives are practiced to encourage prompt collections. Payment incentives and collection techniques implemented by peer states are discussed in Chapter 4.

3.4. Current Forms: M54, Log Sheets, Crash Report, WMS (timecard)

The forms of the crash repair cost recovery process document repair details. They provide the evidence to accurately identify and invoice the responsible parties for the fully-loaded repair costs. Where there exist any discrepancies or uncertainty in document information, the ability to associate the damage to a crash decreases and the insurance company or driver has more leverage to dispute the invoice.

The M54 form is the critical document of the crash repair cost recovery process because it provides an itemized list of the repair costs for the driver and insurance company. In addition to the repair costs, the form contains the crash, repair and M54 report dates, crash location details, the driver, and the repair manager as shown in Figure 1.4 in Chapter 1. The M54 has a section labeled "type of material;" this section also includes the equipment and labor effort in the majority of the M54s despite being designated for only materials. A private contractor is paid by the material quantities because the labor and equipment fees are included in the material cost. Therefore, an M54 for a contractor only lists material items while an INDOT in-house repair will include the materials, equipment and labor.

The crash report is significant to the crash repair cost recovery process because it records the driver's contact information and the location of the damage. A crash report typically contains at least 3 pages; an example crash report is seen in Figure 2.11 – Figure 2.13. Fields relevant to the M54 in the crash report in page one (Figure 2.11) are the crash date, crash location details, and state property. The second page (Figure 2.12) contains a narrative of the crash, which indicates the responsible party if two vehicles are involved. The third page (Figure 2.13) contains the driver's contact information, their insurance information, vehicle description, and with what property they collided. Additional pages include another vehicle involved in the crash or details of passengers injured in the crash.

The attenuator log (Figure 3.19) is used in some INDOT units and is an electronic version of the field attenuator log (Figure 3.20) and associates a cost to the quantities recorded in the field. The work management system timecard (Figure 3.21) also uses the field attenuator log to allocate the work of each laborer for the day. The attenuator log and timecard forms are used in the LaPorte and Crawfordsville process and outline the cost recovery processes occurring before the M54 is created.

3.5. Conclusions

INDOT has crash repair recovery processes that vary throughout each district. Crawfordsville queries crash reports monthly, Fort Wayne doesn't search crash reports until the M54 is completed, and the Indianapolis queries crash reports several times a week. For documentation, Fort Wayne takes pictures of the damage and repairs.

Analyzing the invoice amounts showed that the top 10% of invoices account for 56% of the total invoice amount and over 50% of the invoices are below $419.

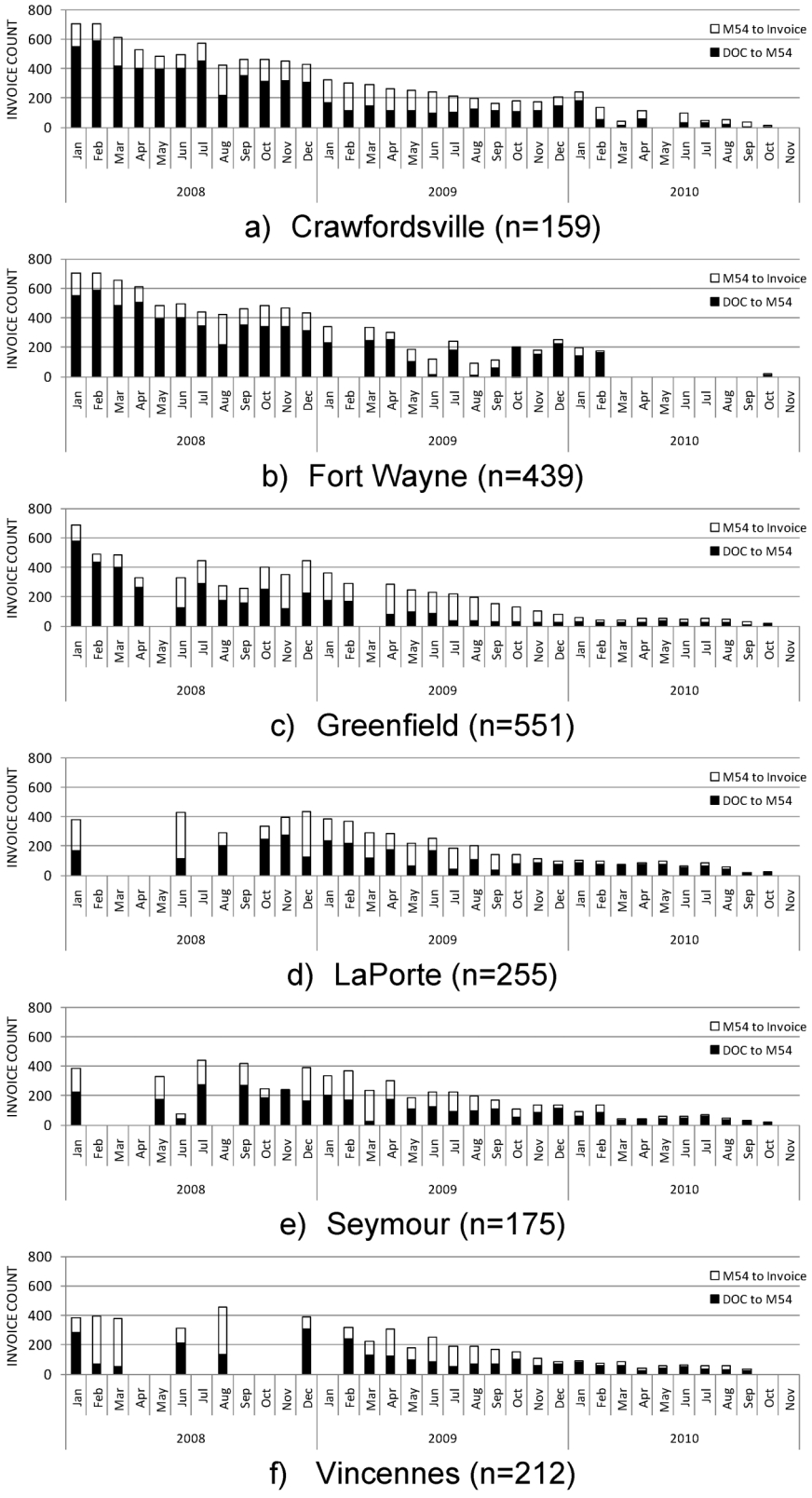


Figure 3.11: Average number of days between date of crash (DOC) and invoice categorized by crash date (invoices sent between 2/22/2010 – 11/19/2010)

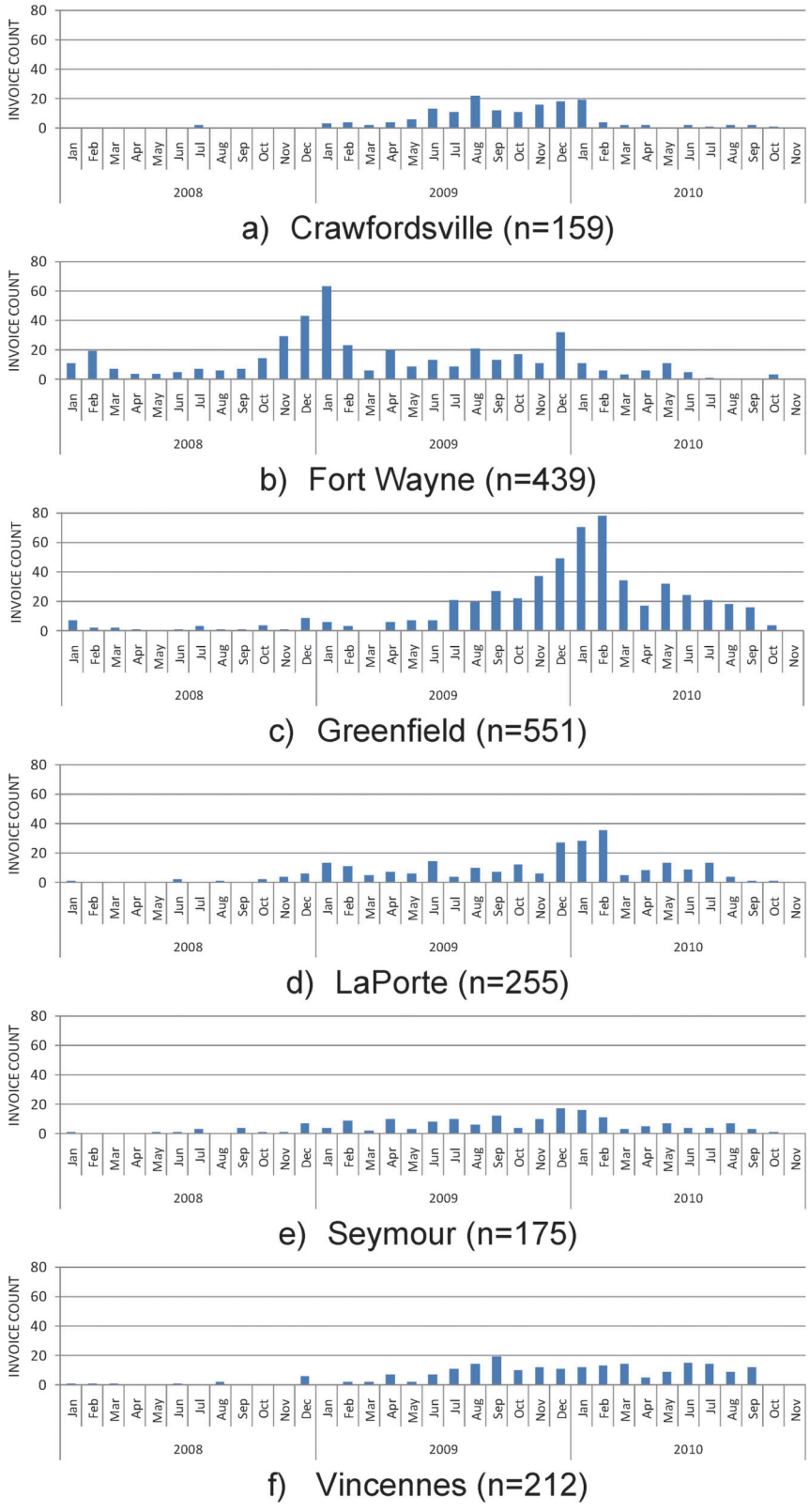


Figure 3.12: Count of invoices categorized by crash date (invoices sent between 2/22/2010 – 11/19/2010)

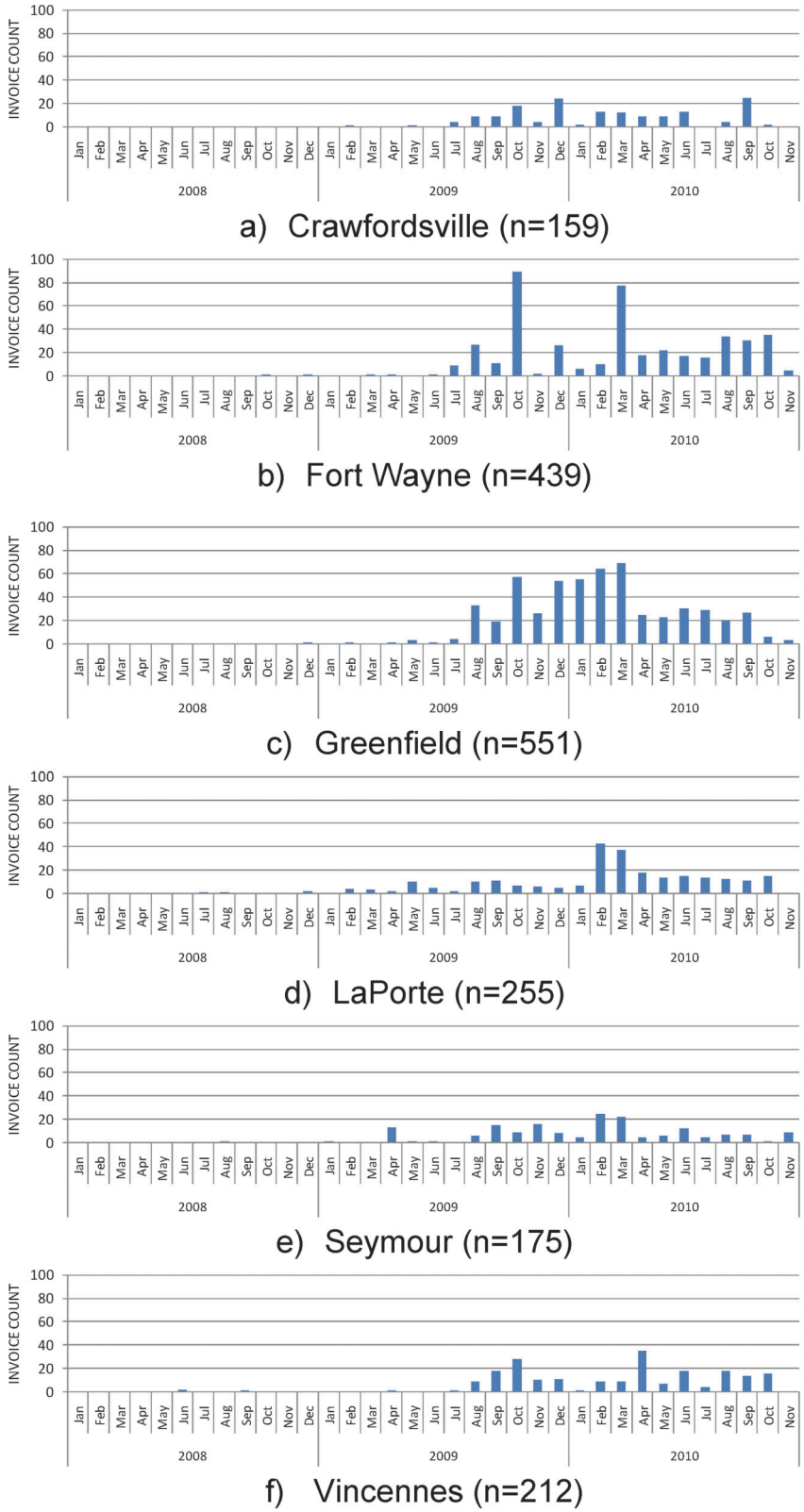


Figure 3.13: Count of invoices categorized by M54 date

(invoices sent between 2/22/2010 – 11/19/2010)

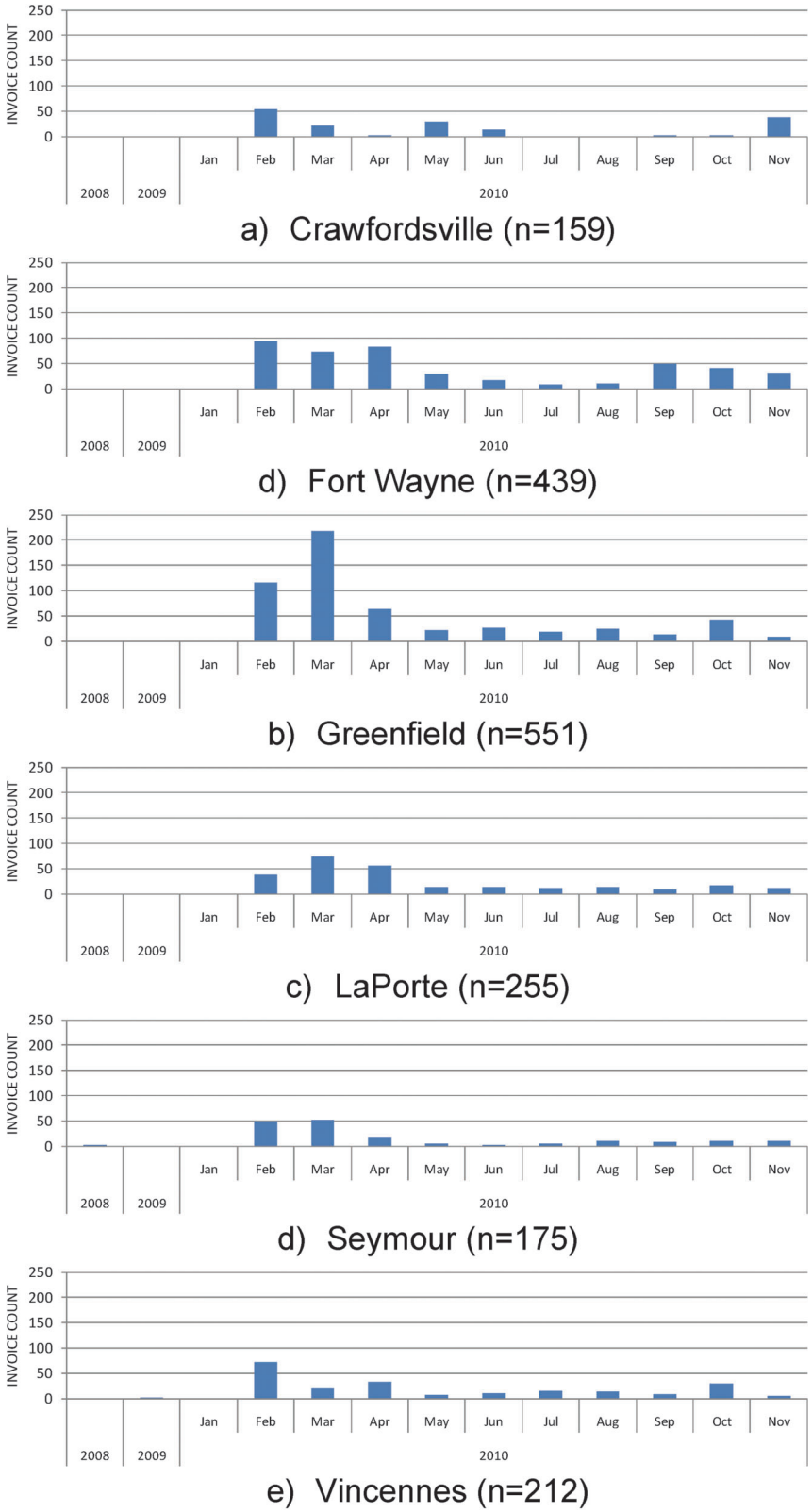


Figure 3.14: Count of invoices categorized by invoice date

(invoices sent between 2/22/2010 – 11/19/2010)

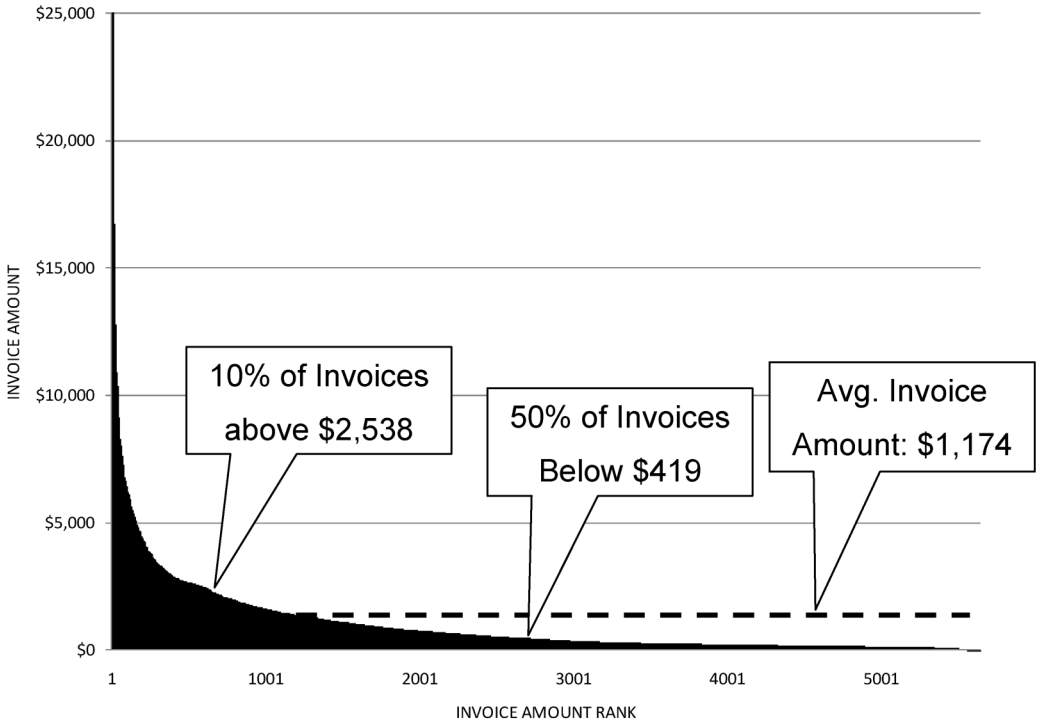


Figure 3.15: Distribution of invoice amounts for INDOT database (n = 5,646) 6/30/1999 – 3/17/2010

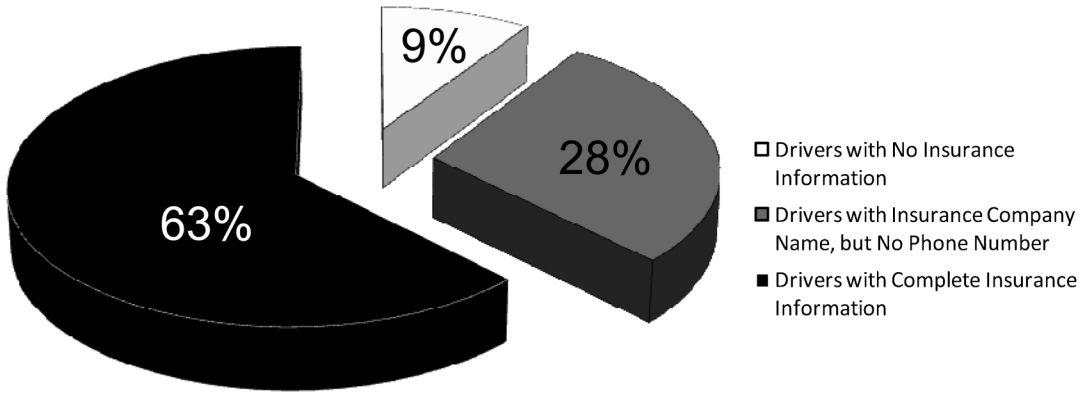


Figure 3.16: Insurance rate based on DSP crashes in Indiana (n = 2,313) (1/1/2010 – 8/6/2010)

These methods and statistics are considered in developing practices for INDOT as discussed in Chapter 5.

CHAPTER 4. SYNTHESIS OF CRASH DOCUMENTATION AND COST RECOVERY PROCESSES BY PEER STATES

This study gathered and evaluated peer states' reimbursement practices and processes for damage to state property. Other states encounter similar challenges in documenting and recovering the repair costs for crashes with DSP. The crash repair recovery process practices discussed in the peer states include:

- the administration structure
- the mechanism to initiate the crash repair cost recovery process
- marking damage to state property
- including administration, overhead, fringe, or other fees in the invoice
- penalties for late or no payment
- notification of an imminent invoice to the driver and/or insurance company
- collection practices

A survey was e-mailed to all US state transportation and highway agencies in May 2010 and a second survey was sent in July 2010. The May survey had 41

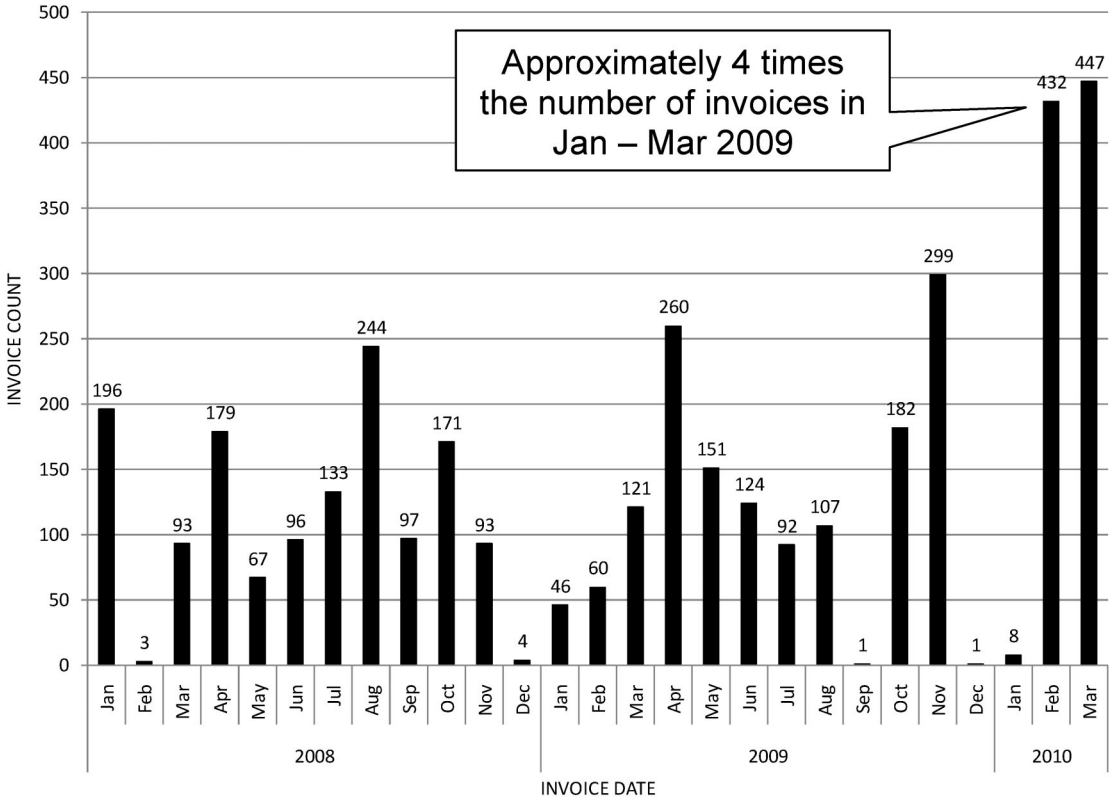


Figure 3.17: Total invoices sent categorized by invoice date (1/1/08 – 3/22/10) (n=3,707)

participants and the July survey had 13 participants (Figure 4.1). There is some variation in the sample size for upcoming figures because survey participants did not complete all survey questions or provided additional information.

4.1. Administrative Structure in Agencies

The administration structure of the crash repair cost recovery process varies in other state highway and transportation agencies from only one person to an entire risk management department. Based upon webinar dialogue with these states, we felt that states that developed greater ownership in the administrative structure understood their processes at all levels, responded promptly to crashes with DSP, and obtained the highest collections percentage.

A one-person administrative structure is found in Nebraska, Oregon, Rhode Island and New York (one person/region).

- Nebraska Department of Roads has an individual query the records for the entire state and sends out invoices.
- The Oregon Department of Transportation coordinates the maintenance crew repairs with police dispatch through one individual. Oregon does not have a crash report database and retrieves the crash reports from the law enforcement agency when they are called to a crash site.
- Rhode Island recovers repair cost using one person to run a software system that enables crash database queries unavailable to INDOT, such as specific crash narrative words or phrases. It also tracks each claim's stage in the recovery process to automatically send reminder e-mails when the process has passed target time periods for a given stage.
- New York has an accident recovery program that consists of one individual accountable to manage operations for one region of the state. This state gives an example how a larger state can use a one-person administration structure in a large population state of eleven regions.

The administrative structure in Alabama, Louisiana, Utah, and Pennsylvania is a risk management department. The risk management department of Alabama is comprised of a group of attorneys that sends invoices and pursues collections. The states using such departments are responsible for the post-repair processes and have little contact with personnel who document the crashes. This organizational structure appeared to be more prevalent across the states, but appeared less efficient in recovering costs because the staff that documents the crash damage are separate from those that repair the damage.

4.1.1. Involving the Private Sector in Administration

There are two exceptions in using a public agency to repair damage, send invoices, and pursue collections in the crash repair cost recovery process; Oklahoma and Massachusetts. Oklahoma hires a consultant, to create invoices and track collections for crashes with DSP. The consultant does this using the crash report narratives and

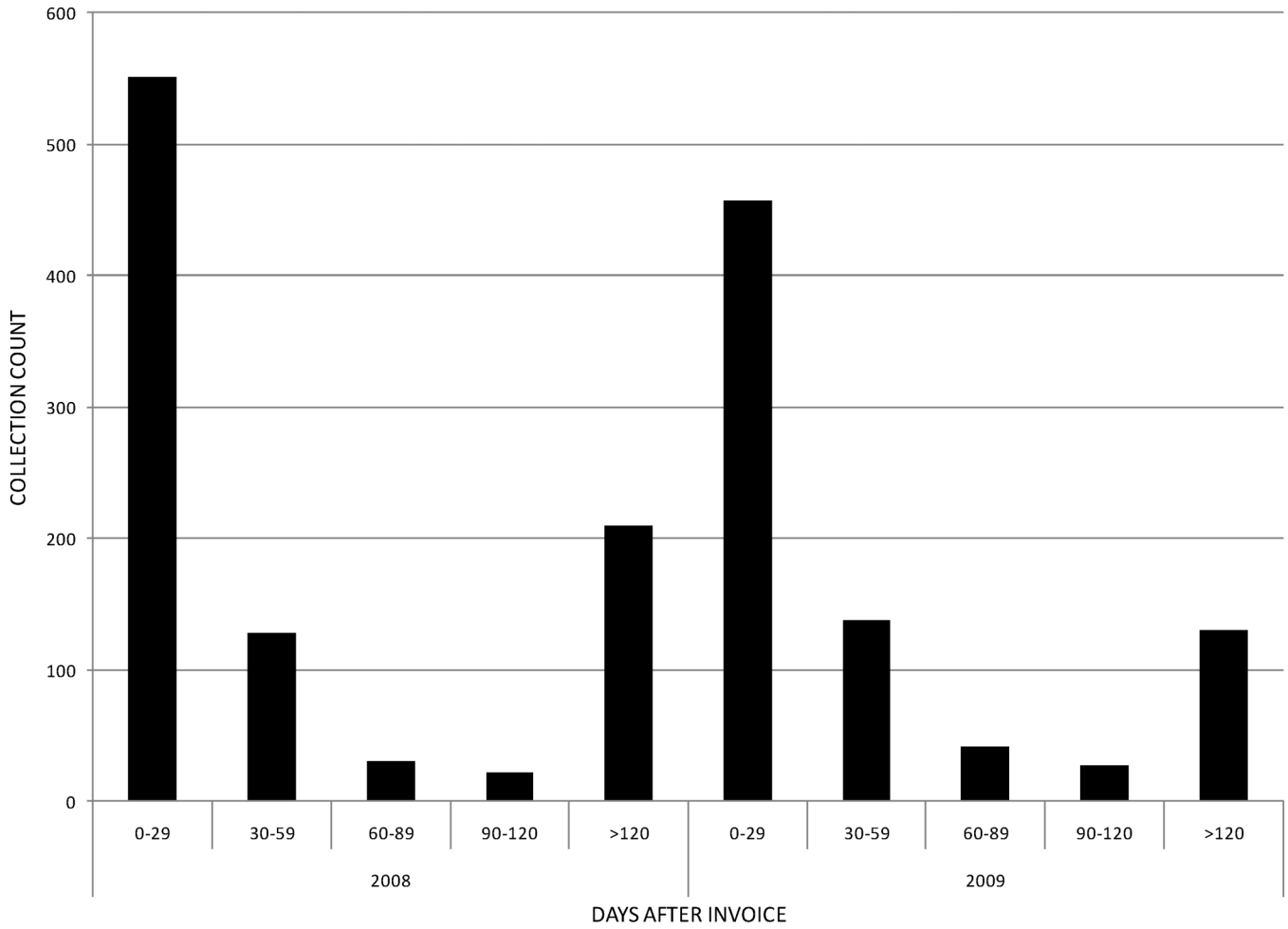


Figure 3.18: The distribution of time invoices aged receivables (n= 1,737)

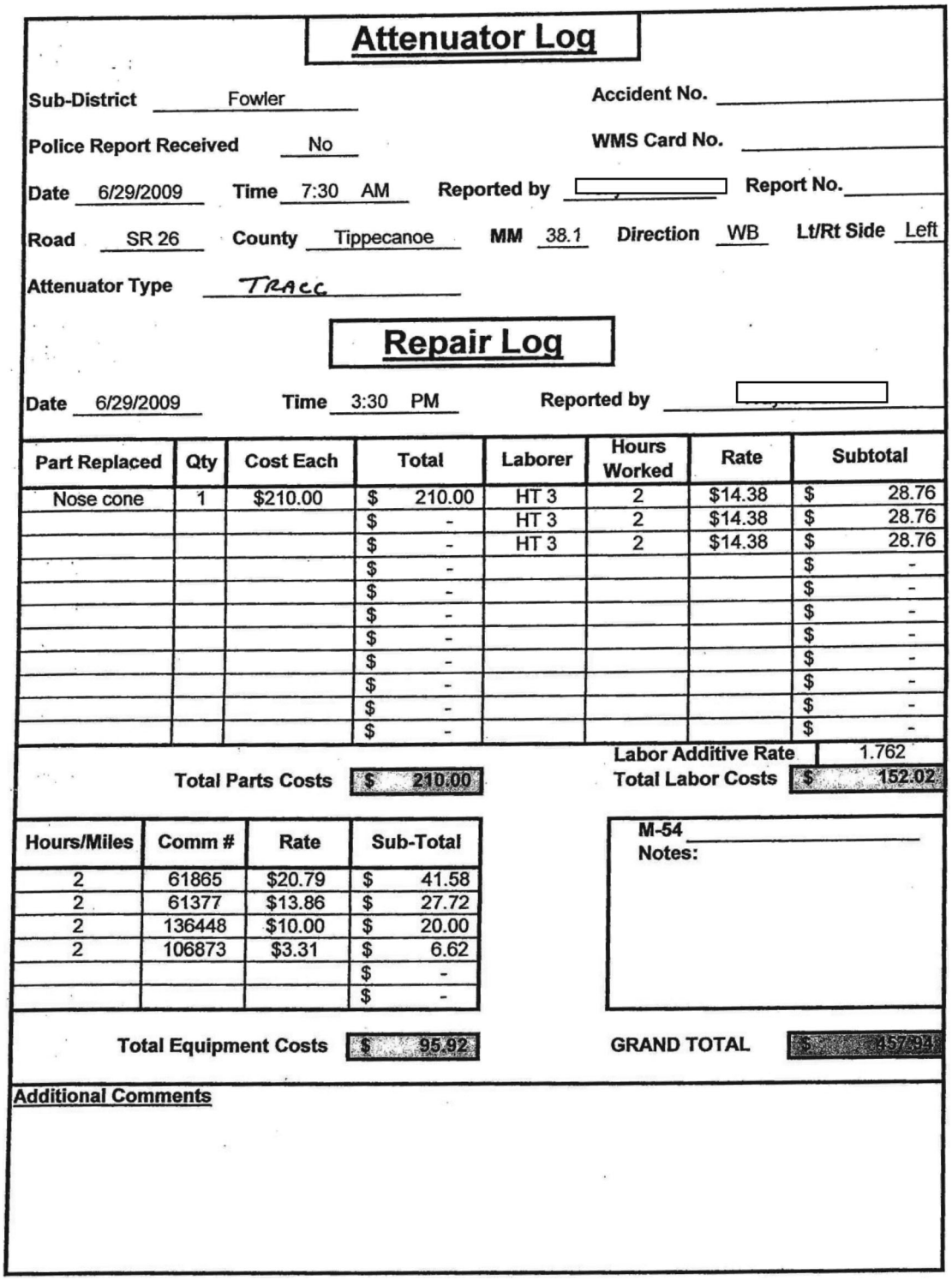
other fields without visiting the crash site, and then negotiates with the driver and/or insurance companies if necessary. A fee for the consultant's work is included on the invoice. Advantages of this system include reduction of delay (the invoice is sent 1 - 2 weeks after the crash date) and reduction of administration and overhead costs on documentation process; a disadvantage is that it was not clear Oklahoma was recovering the true repair costs.

The Massachusetts Department of Transportation's (MassDOT) system requires the insurance company to select an approved contractor and pay the contractor directly for the repair. MassDOT has established a shortlist of prequalified contractors for state property repairs. When a crash with DSP occurs and does not need to be repaired within two days, a scope of work is prepared by MassDOT for the driver and/or insurance company to put out to bid for the prequalified contractors. The driver and/or insurance company selects the contractor of their preference, receives approval from MassDOT to work and then the contractor is paid by the driver and/or insurance company. This system saves Massachusetts from sending invoices and collecting while providing a competitive bid process for the responsible party of the crash damage. In cases where an emergency repair is needed, the state rotates selecting a pre-qualified contractor and then sends the invoice itself.

4.2. DSP Reimbursement Process Trigger Mechanisms

The trigger mechanism is the first step of the crash repair cost recovery process. The remaining steps continue to the end once the trigger begins. The most common trigger mechanism in peer states as well as in Indiana is receiving a crash report involving DSP, see Figure 4.2. A state may use more than one trigger.

Unlike INDOT, several of the peer states do not have an electronic database and rely on the distribution of crash report paper copies filtering down to the appropriate districts. Other states periodically retrieve the crash reports involving DSP from local law enforcement offices. The trigger mechanism "police notification" differs from "crash reports" because the police notify maintenance crews or office while present at a crash site. Notification through an insurance company was found to be the sole trigger in Utah. Maintenance crews are the second most common trigger by states.



Attenuator Log

Sub-District Fowler — Accident No. _____

Police Report Received No — WMS Card No. _____

Date 6/29/2009 Time 7:30 AM Reported by _____ Report No. _____

Road SR 26 County Tippecanoe MM 38.1 Direction WB Lt/Rt Side Left

Attenuator Type TRACC

Repair Log

Date 6/29/2009 Time 3:30 PM Reported by _____

Part Replaced	Qty	Cost Each	Total	Laborer	Hours Worked	Rate	Subtotal
Nose cone	1	$210.00	$ 210.00	HT 3	2	$14.38	$ 28.76
			$ -	HT 3	2	$14.38	$ 28.76
			$ -	HT 3	2	$14.38	$ 28.76
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -
			$ -				$ -

Labor Additive Rate 1.762

Total Parts Costs $ 210.00 — Total Labor Costs $ 152.02

Hours/Miles	Comm #	Rate	Sub-Total
2	61865	$20.79	$ 41.58
2	61377	$13.86	$ 27.72
2	136448	$10.00	$ 20.00
2	106873	$3.31	$ 6.62
			$ -
			$ -

M-54 _____

Notes:

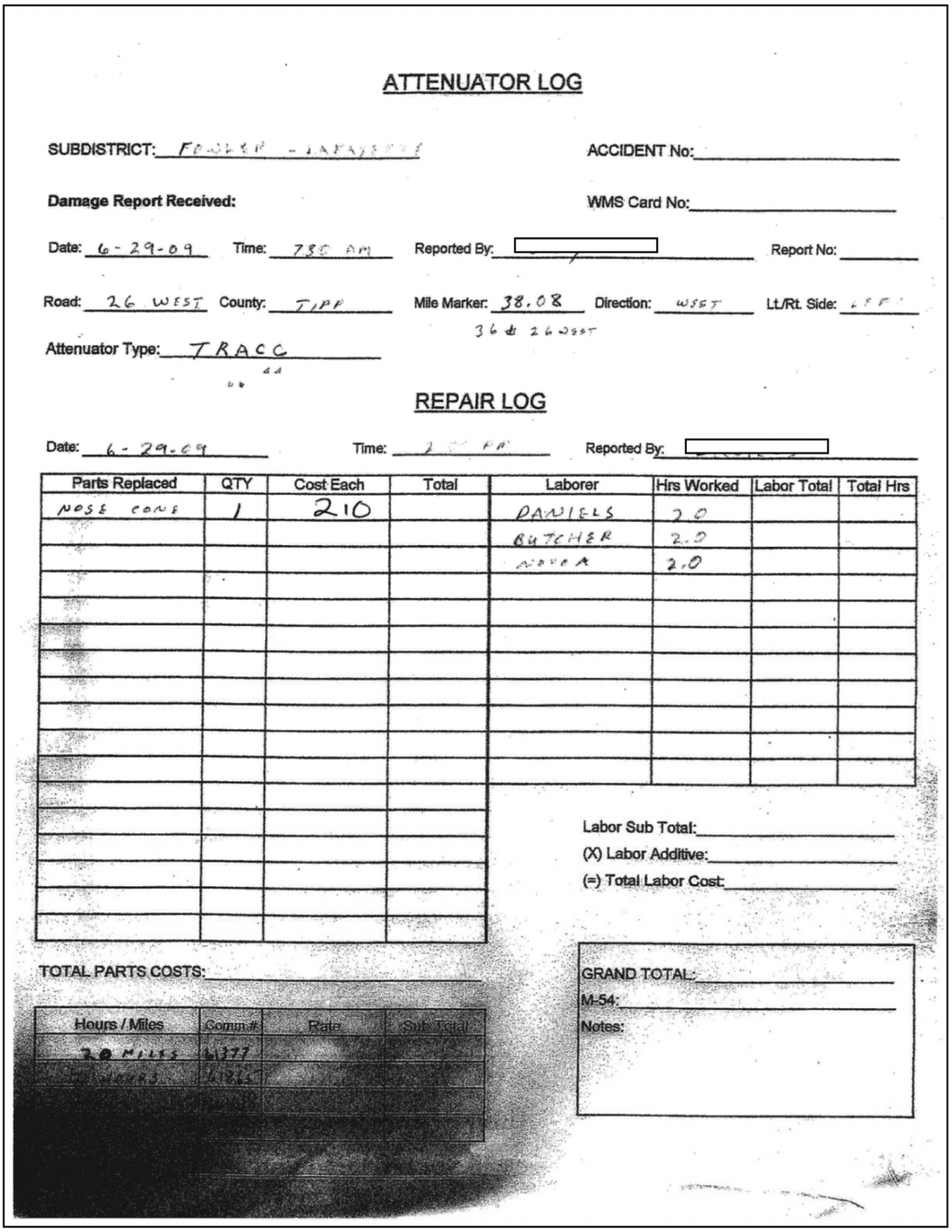
Total Equipment Costs $ 95.92 — GRAND TOTAL $ 457.94

Additional Comments

Figure 3.19: Example attenuator log (Fowler sub-district)

4.2.1. Associating Damage to the Correct Crashes Via Tags/Decals

A unique procedure used in Florida, Minnesota, and North Carolina and recently in Texas, Kentucky, and Tennessee is marking damage to state property at a crash site with a decal or tag. The law enforcement officer fills out the decal/tag at the crash site, see Figure 4.3. The maintenance crews can immediately identify where damage has occurred and the associated crash report. More than one decal/tag is warranted to denote the limits of extensive damage. A decal is



ATTENUATOR LOG

SUBDISTRICT: FOWLER - LAFAYETTE ACCIDENT No:

Damage Report Received: WMS Card No:

Date: 6-29-09 Time: 730 AM Reported By: Report No:

Road: 26 WEST County: TIPP Mile Marker: 38.08 Direction: WEST Lt./Rt. Side: LEFT

36 @ 26 WEST

Attenuator Type: TRACC

REPAIR LOG

Date: 6-29-09 Time: 2 PM Reported By:

Parts Replaced	QTY	Cost Each	Total
NOSE CONE	1	210	

Laborer	Hrs Worked	Labor Total	Total Hrs
DANIELS	2.0		
BUTCHER	2.0		
NOVAK	2.0		

Labor Sub Total:

(X) Labor Additive:

(=) Total Labor Cost:

TOTAL PARTS COSTS:

GRAND TOTAL:

M-54:

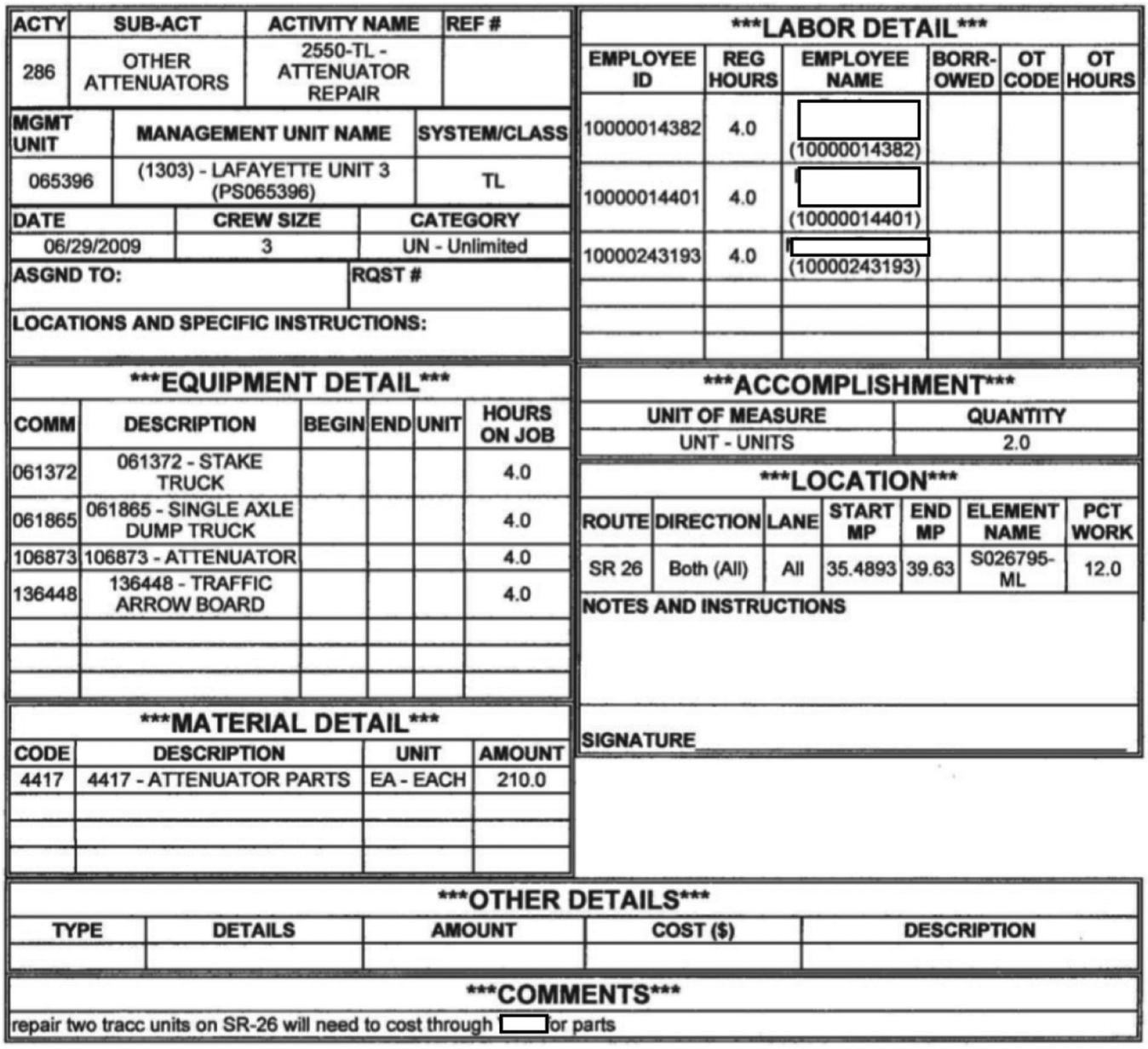
Notes:

Hours / Miles	Comm #	Rate	Sub Total
2.0 MILES	4377		

Figure 3.20: Example field attenuator log (Fowler sub-district)

suitable for warmer climates while a waterproof tag is more desirable in regions with wintry conditions. The decal/tag system saves time in attempting to associate DSP to the crash report and eliminates confusion when there are multiple crashes in close proximity.

In North Carolina, this procedure started as a pilot program in 2002 for one division (district), and then expanded to the entire state 2004. A "Guardrail Tag Bag" containing 25 tags was supplied to only state highway patrol officers by the NCDOT and is now



ACTY	SUB-ACT	ACTIVITY NAME	REF #
286	OTHER ATTENUATORS	2550-TL - ATTENUATOR REPAIR	

MGMT UNIT	MANAGEMENT UNIT NAME	SYSTEM/CLASS
065396	(1303) - LAFAYETTE UNIT 3 (PS065396)	TL

DATE	CREW SIZE	CATEGORY
06/29/2009	3	UN - Unlimited

ASGND TO: RQST #

LOCATIONS AND SPECIFIC INSTRUCTIONS:

EQUIPMENT DETAIL

COMM	DESCRIPTION	BEGIN	END	UNIT	HOURS ON JOB
061372	061372 - STAKE TRUCK				4.0
061865	061865 - SINGLE AXLE DUMP TRUCK				4.0
106873	106873 - ATTENUATOR				4.0
136448	136448 - TRAFFIC ARROW BOARD				4.0

MATERIAL DETAIL

CODE	DESCRIPTION	UNIT	AMOUNT
4417	4417 - ATTENUATOR PARTS	EA - EACH	210.0

LABOR DETAIL

EMPLOYEE ID	REG HOURS	EMPLOYEE NAME	BORR-OWED	OT CODE	OT HOURS
10000014382	4.0	[redacted] (10000014382)			
10000014401	4.0	[redacted] (10000014401)			
10000243193	4.0	[redacted] (10000243193)			

ACCOMPLISHMENT

UNIT OF MEASURE	QUANTITY
UNT - UNITS	2.0

LOCATION

ROUTE	DIRECTION	LANE	START MP	END MP	ELEMENT NAME	PCT WORK
SR 26	Both (All)	All	35.4893	39.63	S026795-ML	12.0

NOTES AND INSTRUCTIONS

SIGNATURE

OTHER DETAILS

TYPE	DETAILS	AMOUNT	COST ($)	DESCRIPTION

COMMENTS

repair two tracc units on SR-26 will need to cost through [redacted] for parts

Figure 3.21: Example work management system (WMS) timecard

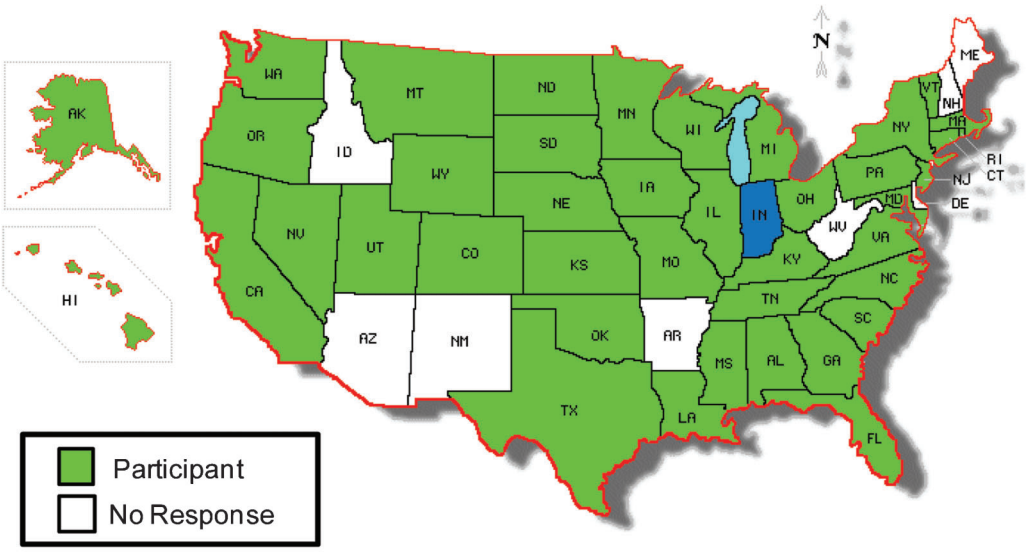
distributed to local and county law enforcement. The state estimates that it has recovered an additional $8.67 million by implementing this guardrail tagging system as seen in Figure 4.4.

4.3. Fees in Addition to Direct Costs

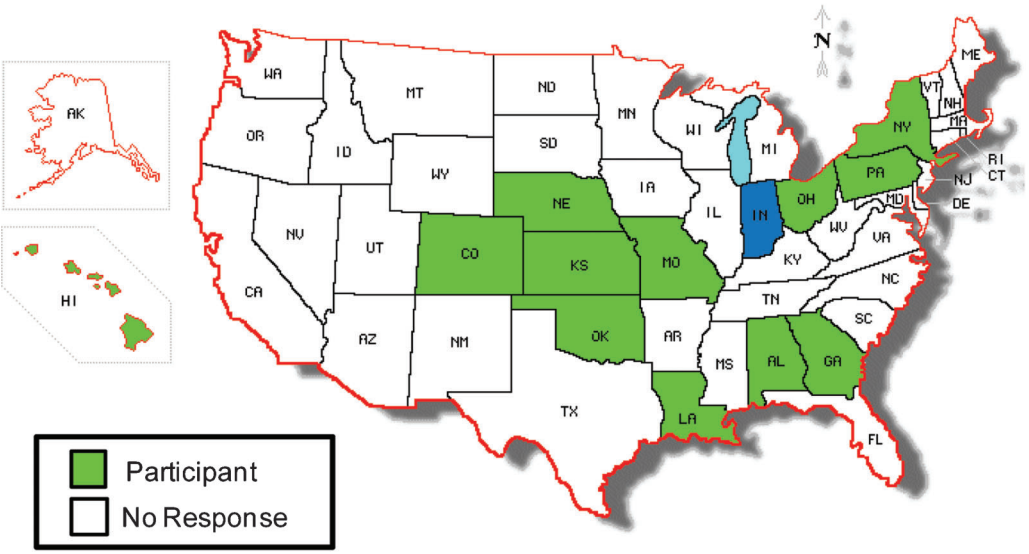
A fully-loaded repair is one that includes the operating expenses, the field work and administrative labor to support the recovery process in addition to the direct costs. The labor, equipment, and material amounts account for site specific costs. Additional fees such administration, overhead, fringe (labor additive), and other fees recompense the indirect costs. The 18 responses about fees are shown in Figure 4.5.

The states with a zero percent cumulative fee indicated they do not charge for indirect costs; consequently, they are partially paying for the repair cost. New York showed the highest indirect costs with a fringe fee of 181%. The Texas fees were derived from their repair worksheets, which may already account for fringe fees.

The opportunity to charge for indirect costs is shown in Figure 4.6. Only one state charges for "other" fees, an engineering fee of 15% when necessary. The most common indirect fee is the fringe fee with 11 states charging between 48% and 181%; Indiana currently includes a fringe fee of 76.2%. The overhead and administrative fees are included in a few states, but are often used as negotiating items with the driver and/or



a) May 2010 survey participants (n=41)



b) July 2010 survey participants (n=13)

Figure 4.1: Survey participation

insurance company about repair cost amounts. The invoice should define for the insurance companies that the administration costs cover the repair costs of completing the M54, organizing the pictures, associating the crash report, and making the invoice for greater compliance.

4.4. Payment Incentives and Penalties

It is expected that the responsible party will pay sooner when there are incentives to meet deadlines. Incentives or penalties include fees or additional charges if the payment is not met by a specified deadline. Eleven of seventeen states indicated they use incentives in their crash repair cost recovery process as seen in Figure 4.7; the incentives used are listed in Table 4.1. Indiana does not use penalties currently. The cost to pursue collections after the deadline is covered partially by the penalty. An 8% interest rate penalty used by New York and 18% penalty by Colorado are examples of penalties used to cover additional costs of delayed collections. The penalty deadlines provide incentives for the driver and/or insurance company to pay promptly.

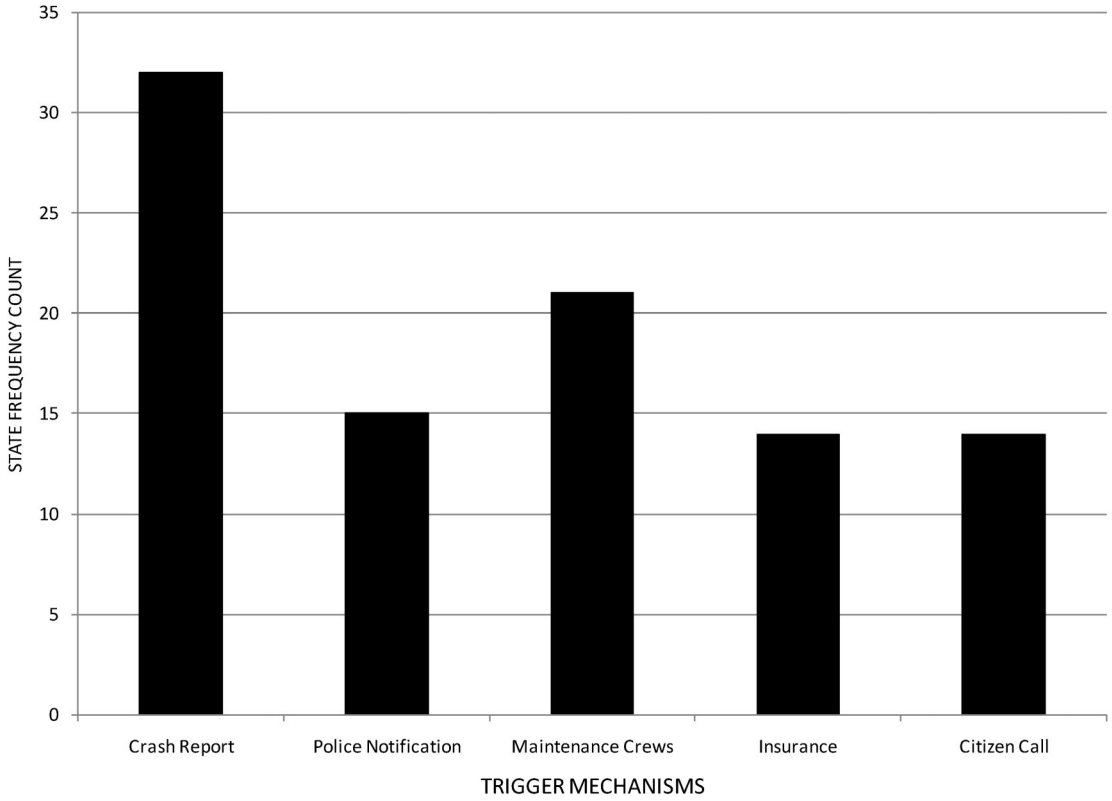


Figure 4.2: Trigger mechanisms listed by other state DOTs to identify crash damage and begin the repair cost reimbursement process (n=41)

Two penalties for failure to pay are revoking the responsible party's driver's license and withholding the responsible party's income tax returns. A driver's license can be revoked in Michigan, Georgia, Kansas, Kentucky, Pennsylvania, and South Dakota. In some states, the driver's license is revoked only if the repair amount exceeds a specified threshold. Kansas, Kentucky and Oregon have legislative approval to withhold income tax returns from errant responsible parties.

4.5. Collections and Recovery Performance

The peer state's collection percentage of invoice amount exceeded that of INDOT in all cases except one. The majority of the total collection amounts exceeded INDOT's. The invoice amounts and collection percentages are seen in Figure 4.8. The invoice/collection amounts have not been labeled by request of the participant states; Alabama, Colorado, Kansas, Missouri, Nebraska, New York, North Carolina, Ohio, Pennsylvania, and Wisconsin. The Indiana invoice and collection totals are derived from averaging the 2008 and 2009 invoiced and collected totals. Without the anomalous case of the $695,000 crash, the state has a 63% collection percentage and ranks 6th instead of 10th, but slips down to 9th for amount invoiced each year. The amounts and percentages were self-reported by the state agencies for varying years. The states closest to Indiana in regards to the invoice amount are Kansas, Nebraska, Colorado, and Wisconsin. The peer state comparison provides a gauge of INDOTs invoicing and collections performance.

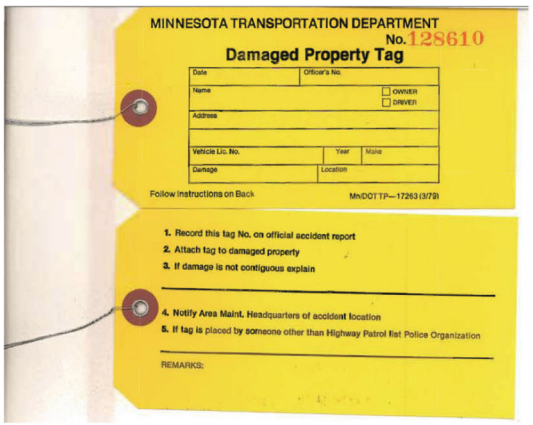
4.6. Peer Group Discussion Items

On September 15, 2010, this study conducted a webinar for all state agencies to participate in a review of the May and July survey results and discuss crash repair cost recovery process issues. The states represented at the webinar were Oregon, Pennsylvania, Nebraska, Oklahoma, South Dakota, Kansas, Kentucky, and New York. The participating states asked questions to other attending states about charging for overhead and administration fees, payment penalties, invoicing procedures, practices in collecting crash reports, and negotiating with insurance companies.

4.6.1. Common Practices for Invoicing Insurance Companies

Drivers and insurance companies frequently contest the invoice amounts for DSP in all peer states. The webinar participants discussed different methods and practices of interacting with the driver and insurance company in seeking reimbursement. New York sets a 14-day deadline for a dispute to be made against the invoice. Oregon sends a notification letter to the driver

a) North Carolina DOT tag



b) Minnesota DOT Tag

Figure 4.3: Examples of crash damage tags

and insurance company as soon as it is aware of damage. An example of the driver notification letter is in Figure 4.9 and the insurance company notification letter is in Figure 4.10. This notification prepares the driver and/or insurance company for their pending invoice; a repair estimate is not included in the letter to avoid invoice disputes that would use the estimate as a baseline.

Significant damage to state property, such as bridge structures, requires special procedures to claim maximum reimbursement. New York pointed out that some crashes exceed the responsible party's insurance coverage, (e.g. $1 million). Repairs for these crashes are lengthy and the costs are only known after several months. In the meantime, owners with property involved in the crash, such as motor vehicles, have already claimed a substantial portion of the limited pool of insurance money. Webinar participants recommended using a repair estimate to invoice the insurance company in these cases to ensure the insurance company is aware of potential claims before the policy limit is reached.

4.7. Conclusions

The survey of peer states provided INDOT with a base of comparison and a precedent for recommending new crash repair cost recovery practices. In comparison to other states, the majority use crash reports and/or maintenance crews to begin the crash repair recovery process. Also, INDOT's collecting percentage and invoicing amount are below average. Practices that are implemented in peer states are including additional fees to direct costs, penalizing late payments, and notifying drivers/insurance companies early in the process. Three states utilize tags to mark damage and one has measured significant returns from implementation. These practices can be implemented to address the challenges described in Chapter 2.

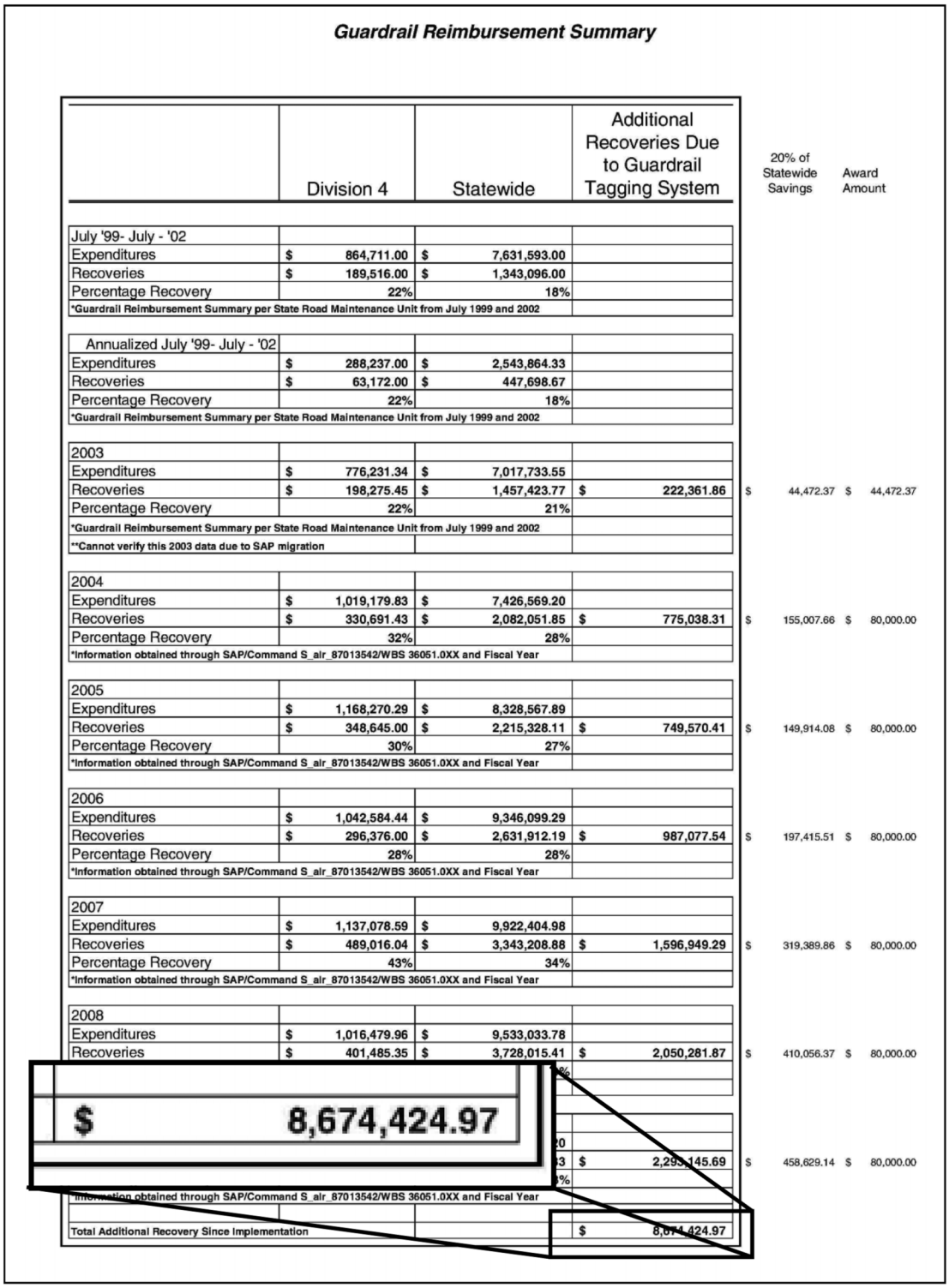
CHAPTER 5. EMERGING INDOT FIELD PRACTICES

This chapter addresses the challenges identified in Chapter 2, captures the best practices from Chapter 3, and consolidates the recommendations outlined in Chapters 4 into forms and practices that could be used for a standard state wide crash repair cost recovery process. The following forms, process, and recommendations are presented:

- a crash damage tagging system by law enforcement concurrent to crash report
- a draft revised M54 form
- the proposed business process
- standard photo documentation of crash damage and repair
- a new primary trigger mechanism for initiating the M54
- enhanced crash database query criteria
- notification letter for driver/insurance company advising of a pending claim by INDOT for crash damage

5.1. Expedited Crash Report Identification

A tagging system (Figure 4.3) allows field personnel to provide the office personnel the crash ID number to unambiguously find the correct crash report for the damaged asset. A tag at each crash site with DSP reduces the labor used to search through crash reports. It also eliminates uncertainty what crash should be associated to the report and provides evidence to the parties responsible for the damage. Figure 5.1 gives an example of a crash with damage and a crash report with the damage to state property box left blank. Tags could be distributed to state, county, and local law enforcement. North Carolina implemented a tagging system statewide in 2004 and they tabulated a $224,000 benefit the first year[2] and



Guardrail Reimbursement Summary

	Division 4	Statewide	Additional Recoveries Due to Guardrail Tagging System	20% of Statewide Savings	Award Amount
July '99- July - '02					
Expenditures	$ 864,711.00	$ 7,631,593.00			
Recoveries	$ 189,516.00	$ 1,343,096.00			
Percentage Recovery	22%	18%			
*Guardrail Reimbursement Summary per State Road Maintenance Unit from July 1999 and 2002					
Annualized July '99- July - '02					
Expenditures	$ 288,237.00	$ 2,543,864.33			
Recoveries	$ 63,172.00	$ 447,698.67			
Percentage Recovery	22%	18%			
*Guardrail Reimbursement Summary per State Road Maintenance Unit from July 1999 and 2002					
2003					
Expenditures	$ 776,231.34	$ 7,017,733.55			
Recoveries	$ 198,275.45	$ 1,457,423.77	$ 222,361.86	$ 44,472.37	$ 44,472.37
Percentage Recovery	22%	21%			
*Guardrail Reimbursement Summary per State Road Maintenance Unit from July 1999 and 2002					
**Cannot verify this 2003 data due to SAP migration					
2004					
Expenditures	$ 1,019,179.83	$ 7,426,569.20			
Recoveries	$ 330,691.43	$ 2,082,051.85	$ 775,038.31	$ 155,007.66	$ 80,000.00
Percentage Recovery	32%	28%			
*Information obtained through SAP/Command S_alr_87013542/WBS 36051.0XX and Fiscal Year					
2005					
Expenditures	$ 1,168,270.29	$ 8,328,567.89			
Recoveries	$ 348,645.00	$ 2,215,328.11	$ 749,570.41	$ 149,914.08	$ 80,000.00
Percentage Recovery	30%	27%			
*Information obtained through SAP/Command S_alr_87013542/WBS 36051.0XX and Fiscal Year					
2006					
Expenditures	$ 1,042,584.44	$ 9,346,099.29			
Recoveries	$ 296,376.00	$ 2,631,912.19	$ 987,077.54	$ 197,415.51	$ 80,000.00
Percentage Recovery	28%	28%			
*Information obtained through SAP/Command S_alr_87013542/WBS 36051.0XX and Fiscal Year					
2007					
Expenditures	$ 1,137,078.59	$ 9,922,404.98			
Recoveries	$ 489,016.04	$ 3,343,208.88	$ 1,596,949.29	$ 319,389.86	$ 80,000.00
Percentage Recovery	43%	34%			
*Information obtained through SAP/Command S_alr_87013542/WBS 36051.0XX and Fiscal Year					
2008					
Expenditures	$ 1,016,479.96	$ 9,533,033.78			
Recoveries	$ 401,485.35	$ 3,728,015.41	$ 2,050,281.87	$ 410,056.37	$ 80,000.00
			$ 8,674,424.97		
			$ 2,295,145.69	$ 458,629.14	$ 80,000.00
*Information obtained through SAP/Command S_alr_87013542/WBS 36051.0XX and Fiscal Year					
Total Additional Recovery Since Implementation			$ 8,674,424.97		

Figure 4.4: North Carolina Guardrail Reimbursement Summary

total benefit to date of $8.67 million. Similar or larger benefits could be realized in Indiana.

A test deployment of the Indiana DSP tag shown in Figure 5.2 was started in January 2011. The tag is a weatherproof, UV-stable, 0.010 thick vinyl tag measuring 3" x 5.5" with 5/8" fiber patch and 3/8" brass grommet. Based upon feedback from INDOT field crews, a second grommet was added on the second printing (Figure 5.3) to allow tag to be "wrapped" around sign posts and reduce flapping in the breeze that can damage writing. This second printing was ordered in March 2011 and also incorporated additional

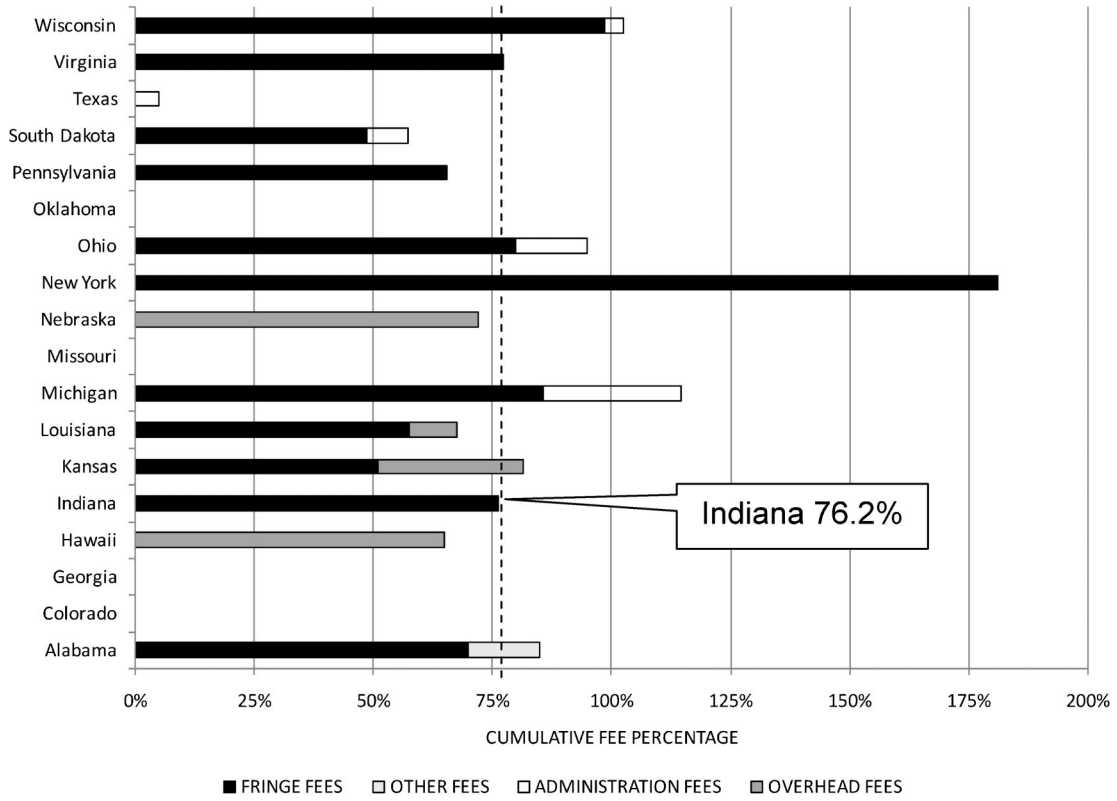


Figure 4.5: Additional fees included in peer state repair cost (n=18)

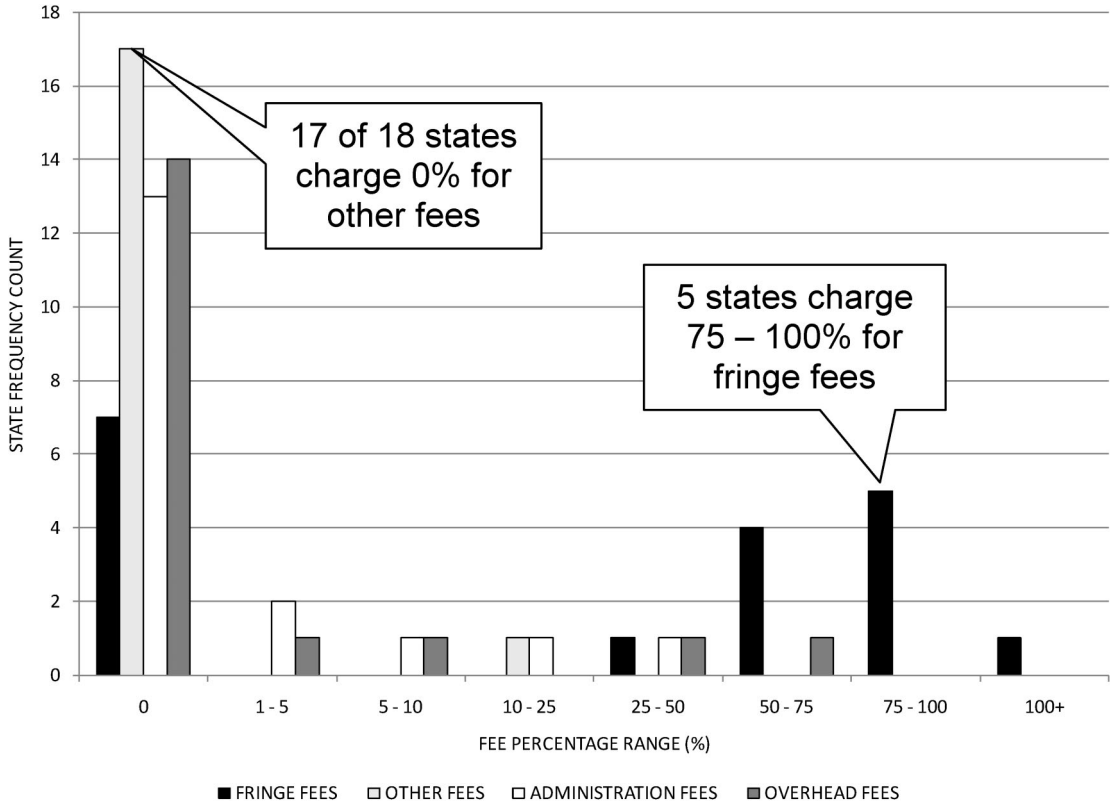


Figure 4.6: Peer state distribution of additional fees (n=18)

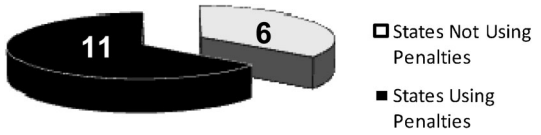


Figure 4.7: Payment incentives and penalties utilized by other states (n = 17)

language regarding fuel spills, environmental impact and fire damage suggested by IDEM colleagues.

For the January 2011 pilot deployment, approximately 200 public safety deployment packages were prepared (Figure 5.4) and presented to select Indiana State Patrol Posts along I-65 between Indianapolis and Lafayette. Each package had the necessary equipment to fill out the requested information and attach it to the damaged infrastructure. The preliminary response to this deployment had been positive, with documentation of crash damage tags being found along I-65 (Figure 5.5).

Crash information is provided on the tag by the investigating officer (Figure 5.6). In addition to the date and time, the crash report number is placed on the tag allowing a direct link between the crash report and damaged infrastructure (Figure 5.7).

5.2. The Revised M54 Form

A revised M54 was developed to provide a standard form that requires specific crash information to better record crash attributes as well as fully-loaded repair costs. An example of page one and two of the revised M54 are found on Figure 5.8 and Figure 5.9, and then each section is described.

The revised M54 in Figure 5.10 identifies the appropriate personnel to fill out the M54 and marks target dates for the M54 sections to be completed. These elapsed times are relative to the date of crash (DOC)[4].

Section I: Preliminary Field Investigation (Figure 5.8; DOC + 7) begins when DSP is identified by the maintenance crew. The preliminary and detailed field investigation, section II, can be performed simultaneously

a) Observation Date: The date the DSP is observed, not the crash date. It is important to provide a narrow range of dates to query the crash database.
b) Observed by: The person who identified the DSP.
c) County: The county where the crash occurred
d) Sub-district: The sub-district where crash occurred
e) Location Description: On interstates, the mile marker is used on the crash report for the location; cross streets are most often used on state routes and US routes[3] (e.g. SR26 CR 1200E). The direction of travel is optional if unknown but the side of the road (west side, east side) adds clarity.
f) Description of Damage: The observer should circle all types of DSP identified at the crash site.

Section II: Detailed Field Investigation (Figure 5.8; DOC + 10) is where an investigator makes a detailed

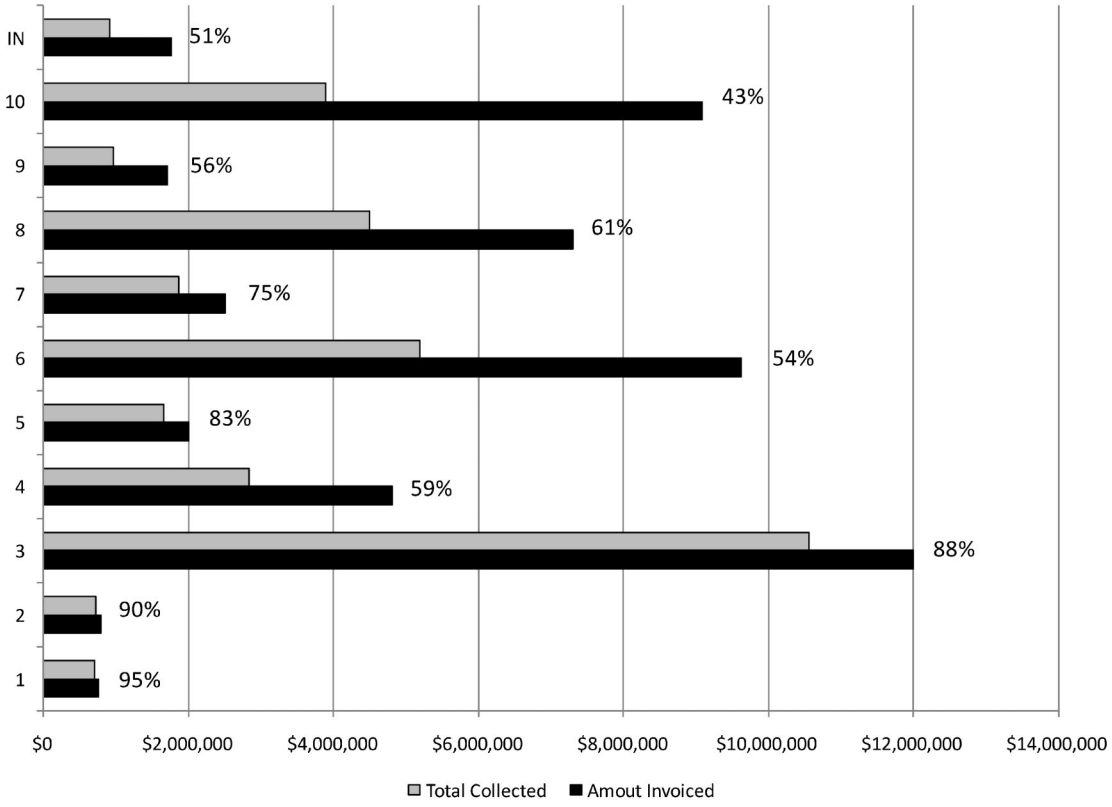


Figure 4.8: Eleven state comparison between amounts invoiced and collected for various years

HARDY MYERS
Attorney General

PETER D. SHEPHERD
Deputy Attorney General

DEPARTMENT OF JUSTICE
CIVIL ENFORCEMENT DIVISION

September 10, 2010

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Re: O.D.O.T. File No.: CAO-03-445
Date of Incident: July 6, 2003
Location: Pacific Hwy., MP 200

NOTICE IS HEREBY GIVEN OF THE CLAIM OF THE OREGON DEPARTMENT OF TRANSPORTATION (O.D.O.T.) against you arising from the above-captioned incident for guardrail damage.

RESPONSIBLE VEHICLE is described as a 1992 Ford, Oregon license 999XXX.
OWNED AND OPERATED BY:

IF YOU WERE INSURED AT THE TIME OF THIS INCIDENT, immediately forward this notice to your insurance carrier for further attention.

WHEN COSTS HAVE BEEN VERIFIED, you will be furnished with a copy of our itemized statement. At that time you will be requested to make payment within 30 days of notification of the charges. Please address inquiries to my attention at the address below, or contact me at (503) 947-0000.

Sincerely,

Nancy Costa
Revenue Agent
Civil Recovery Section

NJC:/Document5

1162 Court Street NE, Salem, OR 97301-4096 Telephone: (503) 947-4400 Fax: (503) 373-7067 TTY: (503) 378-5938

Figure 4.9: Sample notification letter to driver (Oregon DOT)

estimation of the damage quantities needed for repair, takes pictures, and writes down the GPS latitude and longitude coordinates.

a) Investigation Date: The date the field investigator visited the crash site.
b) Investigated By: The person who visits the crash site for the detailed field investigation; may be the observer from Section I.
c) Detailed Location Description: Confirms the correct location given by the observer and adds notes unique to the location.

TABLE 4.1:
Payment incentives and penalties enforced by agencies

State	Penalty Description
Hawaii	$25 after 30 days
Michigan, Kansas, Kentucky, Pennsylvania, and South Dakota	Revoke driver's license
New York	8% Interest after 30 days
Wisconsin	$35 or 15% over 90 days
Georgia	License revoked over $5,000
Colorado	18% if after 71 days for Collection agency
Kansas, Kentucky, and Oregon	Intercept income tax returns

d) Lat/Longitude: The GPS camera records the GPS coordinates of the picture when locked onto satellites.
e) Detailed Damage Description: An overview of the DSP describes the extent and severity of the damage.
f) Work Order Repair Estimated Pay Items: The investigator estimates only the quantities for materials of all the DSP that will need to be repaired.
g) Archived Crash Pictures Network Directory: This is the file path of the pictures taken for that location.

Section III: Office Investigation (Figure 5.8; DOC + 14) documents office investigation to associate the DSP to a crash report. Once the tagging system is fully implemented this will be easily transcribed by maintenance crews. Until then, substitute data querying work using techniques documented later in this chapter (Figure 5.14) will be needed.

a) Crash Report ID: The crash report identification number is found in the top middle of the crash report (e.g. 901273493 in Figure 2.3).
b) Crash Date: The date of the crash.
c) Crash Report is Attached: A "Yes" signifies the crash report was attached to the M54 report and archived in the computer.
d) Date Notification Letters Sent to Driver(s) & Insurer(s): A notification letter is sent to both the driver and the insurer in the crash so they are aware of the pending repair costs.
e) Number of Drivers & Insurers Notification Letters Sent: If there is more than one driver responsible for the crash, multiple drivers and insurers are sent notification letters.
f) New Archived Crash Picture Location: The new file path for the DSP crash pictures transferred from Section II part (g); it is suggested that the crash report ID be used as the folder name to simplify future reference. This will shelter all pertinent information for repair.
g) Archived Repair Pictures Network Directory: The pictures of the repair are transferred into the folder created in Section III part (f).

Section IV: Work Order Repair Estimate (Figure 5.8 and Figure 5.9) is critical to assure an appropriate construction scope when using competitive outsourcing for repairs. Someone familiar with the repair construction and the crash site damage should calculate and estimate the quantities.

a) Estimation Date: The date the estimate was done.
b) Estimated by: The person who calculated the estimate.
c) Final Pay Items: The back section of the M54, see Figure 5.9, has a column with the title "Work Order Repair Estimate" that calculates an estimated cost using the current contract line items. The material, equipment, labor, MOT, and other costs necessary will be recorded on the "Actual Repair Cost" section.

Section V: Approval to Proceed (Figure 5.8) shows INDOT approval to proceed with repair. This section would be used for contractors to submit potential repair locations.

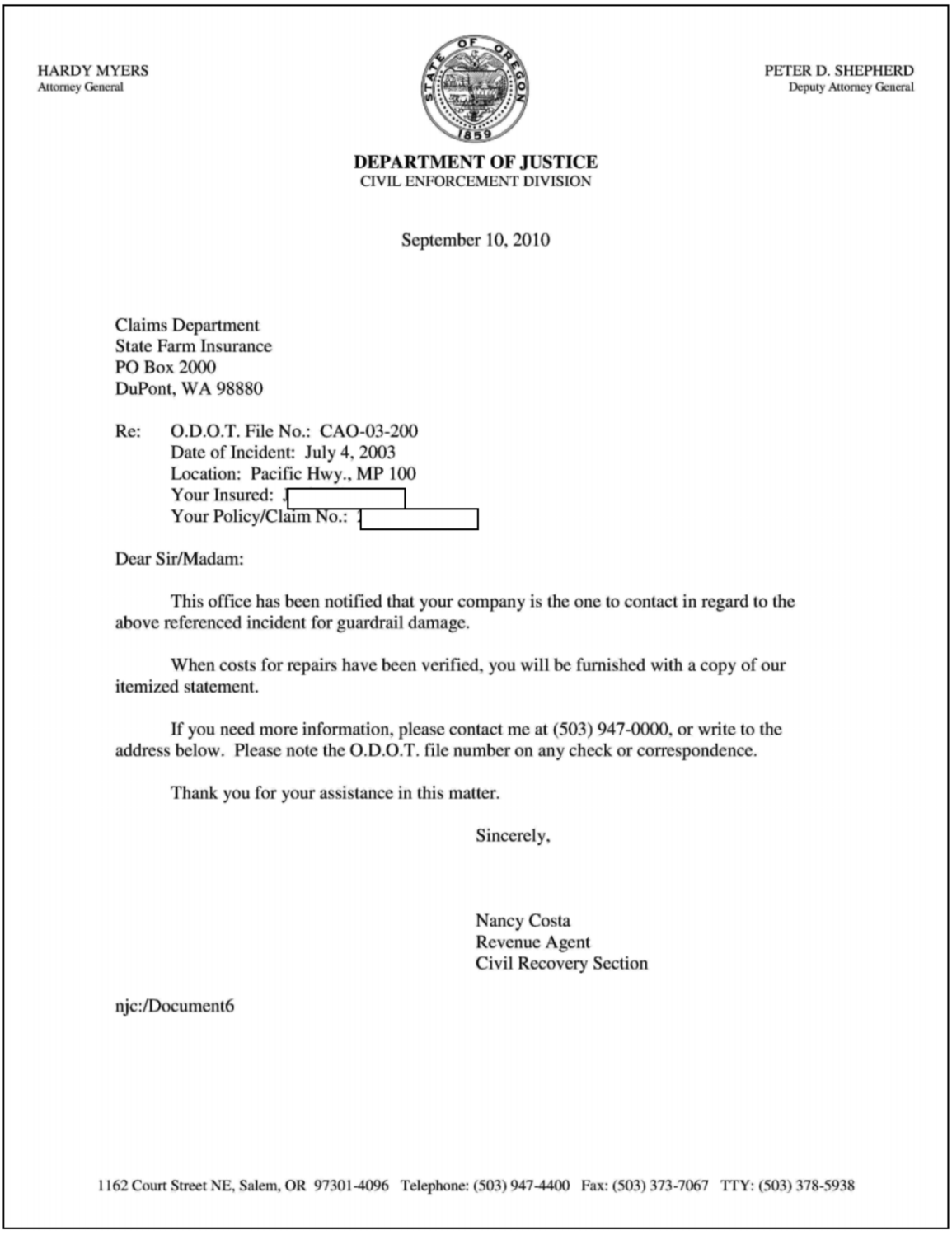
a) Responsible manager: The approval is given by INDOT staff with experience in DSP repairs.
b) Approval Date: The date approval was given by the responsible manager.
c) Work Order #: The work order number INDOT assigns for the contractor.

Section VI: Documentation of Repair (Figure 5.8 and Figure 5.9; DOC + 14) documents the repair details with the pay items reflecting standard INDOT fees or contract amounts.

a) Repair Date(s): The day(s) that the crew worked on the repair.
b) Repaired by: The type of organization, in-house or contracted, that performed the repair work; sometimes both are involved.
c) Photo of Repair Completed: Pictures of the repaired infrastructure. This is sometimes required by insurance companies.
d) Inspected by: If repair work is contracted, INDOT may review the repair to certify that the repairs were satisfactory and complete, otherwise this is left blank.
e) Detailed Schedule of Actual Pay Items and Costs: The pay items and costs break down the total cost. Confer the WMS for labor, material, and equipment rates while adding the labor multiplier.

Section VII: Accounting Tracking (Figure 5.8; DOC + 28) tracks the collections for the repairs.

a) Invoice Date: The date the invoice was sent to the driver or insurer.
b) Invoice Amount: The amount of the invoice will be the same as the total cost from the back page of the M54.
c) Paid Date: The day the entire payment was received. Some people have payment schedules, and the additional dates may be listed if they denote pending payment and the corresponding amounts in part (d).



HARDY MYERS
Attorney General

PETER D. SHEPHERD
Deputy Attorney General

DEPARTMENT OF JUSTICE
CIVIL ENFORCEMENT DIVISION

September 10, 2010

Claims Department
State Farm Insurance
PO Box 2000
DuPont, WA 98880

Re: O.D.O.T. File No.: CAO-03-200
Date of Incident: July 4, 2003
Location: Pacific Hwy., MP 100
Your Insured: [redacted]
Your Policy/Claim No.: [redacted]

Dear Sir/Madam:

This office has been notified that your company is the one to contact in regard to the above referenced incident for guardrail damage.

When costs for repairs have been verified, you will be furnished with a copy of our itemized statement.

If you need more information, please contact me at (503) 947-0000, or write to the address below. Please note the O.D.O.T. file number on any check or correspondence.

Thank you for your assistance in this matter.

Sincerely,

Nancy Costa
Revenue Agent
Civil Recovery Section

njc:/Document6

1162 Court Street NE, Salem, OR 97301-4096 Telephone: (503) 947-4400 Fax: (503) 373-7067 TTY: (503) 378-5938

Figure 4.10: Sample notification letter to insurance company (Oregon DOT)

d) Paid Amount: The payment amount received from the driver or insurer.
e) Close out Summary Details and Narrative: Noteworthy repair details included to explain unexpected or additional costs.

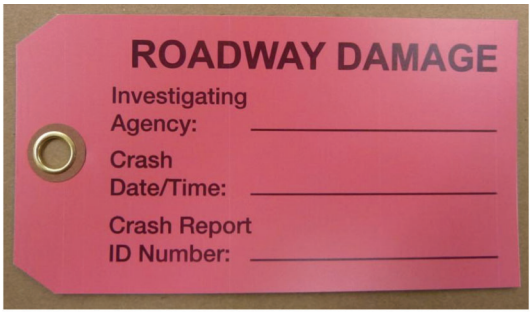
5.1. Proposed Business Process

The proposed business process is expected to decrease the time duration between the crash date and the date the invoice is sent. A tagging system would

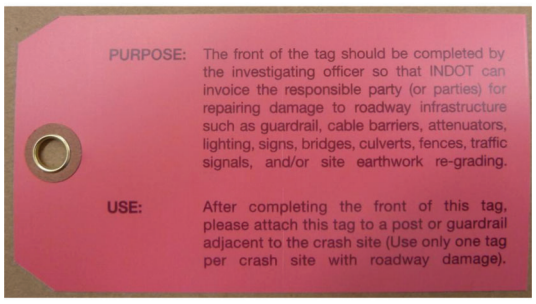
a) Crash site before repair

b) Crash site after repair

Figure 5.1: Crash attenuator and cable-median barrier property damage from crash @ I65 MM ~197.4



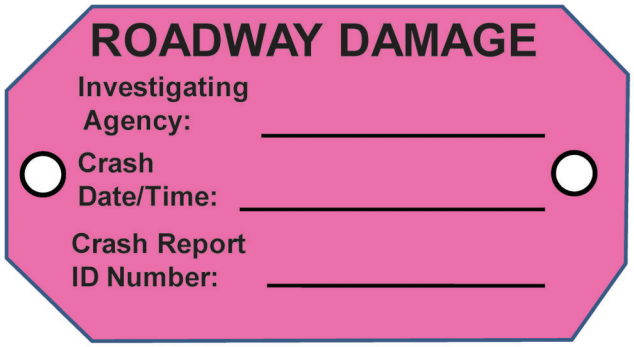
a) Front



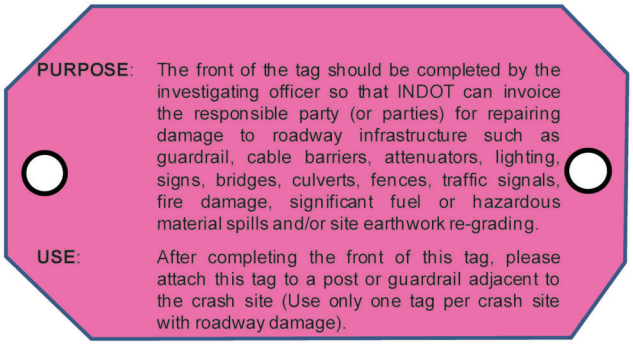
b) Back

Figure 5.2: Indiana Roadway damage tag (Version 1)

significantly reduce the process time by immediately associating the damage to a crash report. The tags would mark the crash report ID for the maintenance crew who would serve as the triggering mechanism to



a) Front



b) Back

Figure 5.3: Indiana Roadway damage tag (Version 2)

begin the crash repair recovery process instead of the crash report.

The maintenance crews identify DSP on scheduled route patrols or are notified by police dispatch to visit a crash site; this should occur within seven days of the crash. Photographs of the damage should be taken then or shortly thereafter, within ten days after the crash. Some crash sites are missed by maintenance crew patrols due to the poor visibility of damage and challenging locations to visit routinely, such as interstate ramps. When situations arise where the maintenance crews do not observe damage to state infrastructure, a periodic query is discussed in section 5.3

The crash location and observation date is sent to office personnel to query the crash report database. The crash report could be associated to the damage in less time due to a narrower time range and should ideally be done within fourteen days of the crash.

The office mails a notification letter of the pending crash damage investigation to the driver and insurance company; this should occur within fourteen days of the crash. Then the office sends the crash report to the maintenance crew. Damages and costs are documented within 14 days after the crash because repairs typically happen before the crash report arrives. These M54 documents are sent to INDOT central office where an invoice is sent within twenty-eight days of the crash (Figure 5.10).

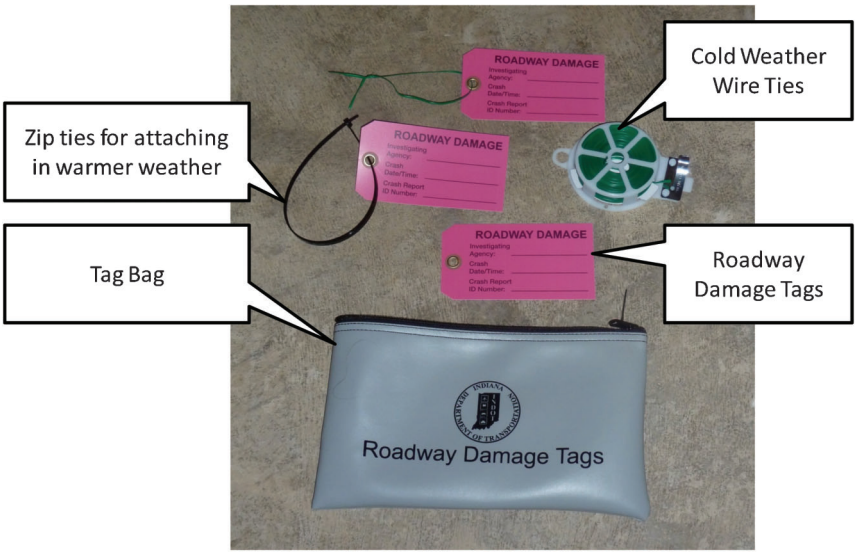


Figure 5.4: Public safety deployment package (January, 2011).

a) Crash Damaged Sign b) Tag placement on sign

Figure 5.5: February 1st, 2011 damage at southbound I-65, MM 133.2 tagged by ISP Major Melville; Photos Courtesy of Dan Rogers

Figure 5.6: Crash tag information, tagged by ISP Major Melville; Photos Courtesy of Dan Rogers

5.2. Photo Documentation of Crash Damage

Photos of crash-damaged infrastructure provide the driver and/or insurance company visual confirmation of the damage and repair. A photo with GPS coordinates is valuable to mark a location with precision in the event of location discrepancy. Camera models with GPS, as shown in Figure 5.11 are available where the picture's coordinates can be accessed on the camera or geocoded on a map as shown in Figure 5.12. As proposed previously in section 3.2.2:

- The first pictures are of the damage to state property with a time-stamp
- The second pictures are during the repair showing the labor and equipment
- The third pictures are of the repair with a time-stamp

The first picture should be taken when DSP is first observed by the maintenance crew (e.g. placing a barrel).

A well-documented picture captures features of the location and the extent of the damage and repair. A photo can be identified to a specific location with landmarks such as mile markers, bridges, unique buildings, etc. Vehicle identifiers, such as license plates or car parts, at the crash site may also be documented as shown in Figure 5.13.

5.3. Standard Crash Database Query Procedure

Well-defined query procedures are needed to associate the crash report to DSP identified by the maintenance crews without a crash-damaged infrastructure tagging system in place. This study proposes two queries that will identify potential locations with DSP. The first query has the following criteria:

- The date range of collision based on the observed crash date
- The county were the crash occurred
- The state property indicator marked "yes"

The second query uses the following criteria:

- The date range of collision

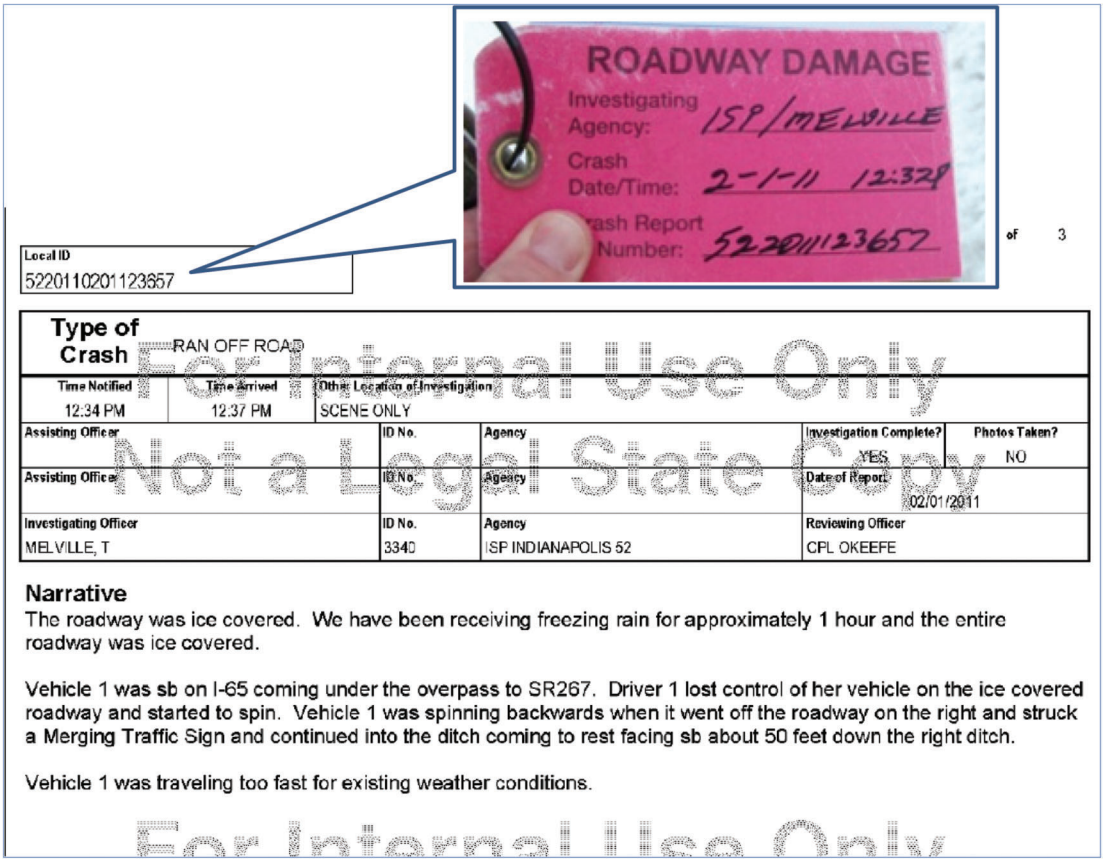


Figure 5.7: Crash tag information associated with crash report information.

- The county
- The collision with indicator marked for "Bridge Rail, Guardrail End, Guardrail Face, Impact Attenuator/ Crash Cushion, and Median Barrier"

Examples of these queries are shown in Figure 5.14. These queries accurately narrow the pool of potential crash reports to associate to damage, saving time while increasing the association proportion and quantities of invoices sent.

5.3.1. Query Application

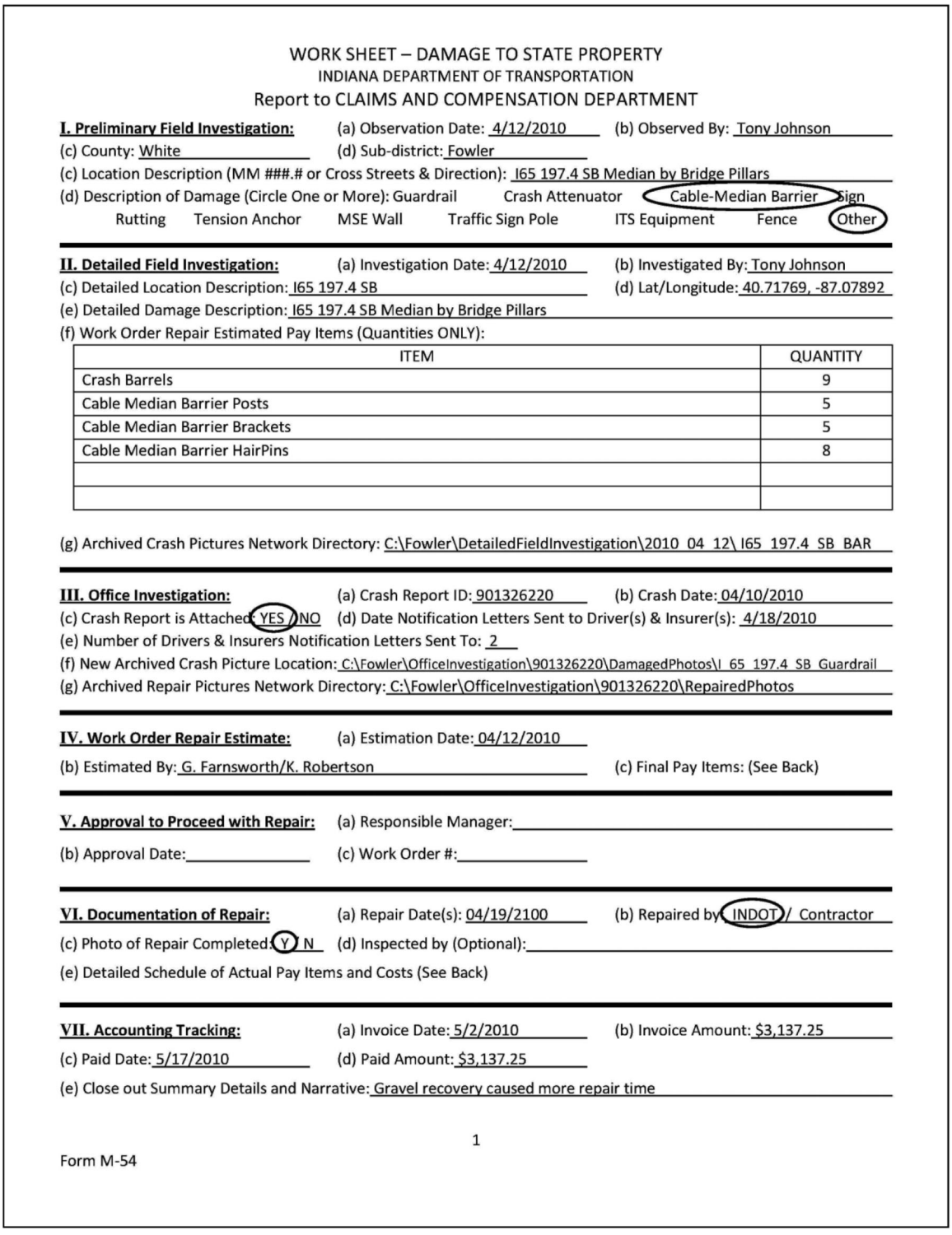
The first query searches crash reports that law enforcement has marked state property damage present. The second query does not consider the state property field, but searches for crash reports that list a collision with bridge rail, guardrail, guardrail face, guardrail end, impact attenuator/crash cushion, or median barrier. The second query accounts for crash reports that damage state infrastructure, but the state property indicator field was not checked by the law enforcement officer. An example of a crash report identified by the second query was shown previously in Figure 2.3 – Figure 2.5. The two queries find a portion of the same reports because both of the query filters are satisfied as seen in the middle section of Figure 5.15. There is also a portion of each query that is found only by that query as shown in the far left and far right sections of the Venn diagram.

One limitation to querying the "collision with" field on the ARIES database occurs when two objects are included in that field. The database only searches the first object inputted and ignores any others included. This should be corrected to increase the query's breadth.

5.4. Invoicing Insurance Companies and Drivers

It is expected that a driver or insurance company that is notified of pending repair charges, sees the repair work, and has the invoice costs itemized will be less likely to dispute the invoice versus invoices without the items previously listed. The fully-loaded repair fees include labor and equipment to investigate the crash site, process the M54 documents, and process the invoice. These fees can be covered by adding an overhead or administration fee to the M54. An administration fee of 10% of direct costs is on the revised M54 in Figure 5.9.

In crashes that exceed the insurance coverage of the motorist, such as a bridge collision, INDOT must maximize its share of the claim. This is achieved by submitting and settling INDOTs claim before any other parties decrease the limited pool, such as other motor



WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

I. Preliminary Field Investigation: (a) Observation Date: 4/12/2010 (b) Observed By: Tony Johnson
(c) County: White (d) Sub-district: Fowler
(c) Location Description (MM ###.# or Cross Streets & Direction): I65 197.4 SB Median by Bridge Pillars
(d) Description of Damage (Circle One or More): Guardrail Crash Attenuator Cable-Median Barrier Sign
Rutting Tension Anchor MSE Wall Traffic Sign Pole ITS Equipment Fence Other

II. Detailed Field Investigation: (a) Investigation Date: 4/12/2010 (b) Investigated By: Tony Johnson
(c) Detailed Location Description: I65 197.4 SB (d) Lat/Longitude: 40.71769, -87.07892
(e) Detailed Damage Description: I65 197.4 SB Median by Bridge Pillars
(f) Work Order Repair Estimated Pay Items (Quantities ONLY):

ITEM	QUANTITY
Crash Barrels	9
Cable Median Barrier Posts	5
Cable Median Barrier Brackets	5
Cable Median Barrier HairPins	8

(g) Archived Crash Pictures Network Directory: C:\Fowler\DetailedFieldInvestigation\2010_04_12\I65_197.4_SB_BAR

III. Office Investigation: (a) Crash Report ID: 901326220 (b) Crash Date: 04/10/2010
(c) Crash Report is Attached: YES / NO (d) Date Notification Letters Sent to Driver(s) & Insurer(s): 4/18/2010
(e) Number of Drivers & Insurers Notification Letters Sent To: 2
(f) New Archived Crash Picture Location: C:\Fowler\OfficeInvestigation\901326220\DamagedPhotos\I_65_197.4_SB_Guardrail
(g) Archived Repair Pictures Network Directory: C:\Fowler\OfficeInvestigation\901326220\RepairedPhotos

IV. Work Order Repair Estimate: (a) Estimation Date: 04/12/2010
(b) Estimated By: G. Farnsworth/K. Robertson (c) Final Pay Items: (See Back)

V. Approval to Proceed with Repair: (a) Responsible Manager:
(b) Approval Date: (c) Work Order #:

VI. Documentation of Repair: (a) Repair Date(s): 04/19/2100 (b) Repaired by: INDOT / Contractor
(c) Photo of Repair Completed: Y / N (d) Inspected by (Optional):
(e) Detailed Schedule of Actual Pay Items and Costs (See Back)

VII. Accounting Tracking: (a) Invoice Date: 5/2/2010 (b) Invoice Amount: $3,137.25
(c) Paid Date: 5/17/2010 (d) Paid Amount: $3,137.25
(e) Close out Summary Details and Narrative: Gravel recovery caused more repair time

1

Form M-54

Figure 5.8: Revised M54 page 1

vehicles involved in the crash. In cases with large financial claims, it is perhaps appropriate to send preliminary repair cost estimates instead of waiting until after the repairs are concluded to receive reimbursement; this practice was recommended from the peer state discussion.

5.5. Managing the Crash Repair Cost Recovery Process

An owner or manager of the crash repair cost recovery process should be appointed for each district[5]. The manager would identify the personnel responsible for each of the responsibilities in the revised M54. Then

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

				Work Order Repair Estimate		Actual Repair	
Description	Contract Item #	Unit	Unit Cost	Quantity	Estimate Cost	Quantity	Total Cost
GUARDRAIL Materials							
Guardrail Steel Beam Galvanized		LF					
Guardrail Post Bracket, 8.5 lb/LF, Galvanized		EA					
Guardrail Post, 8.5 lb/LF, 7' long, Galvanized		EA					
Guardrail Post Plumb		EA					
CRASH ATTENUATOR Materials							
700# Barrel		EA	$168.48	6	$1,010.88	6	$1,010.88
17# Barrel		EA	$161.01	3	$483.03	2	$322.02
21# Barrel		EA	$161.01			1	$161.01
CABLE-MEDIAN BARRIERS Materials							
CMB Terminal Post		EA	$42.90	5	$214.50	4	$171.60
CMB HairPin		EA	$12.96	5	$64.80	5	$64.80
CMB LockPlate		EA	$28.90	8	$231.20	7	$202.30
CMB Tension Adjustment		EA					
Labor (with Benefits) (For INDOT)							
Foreman		HR	$27.25			6	$163.50
Super		HR					
Laborer		HR	$20.99			18	$377.82
Flagman		HR					
Equipment (For INDOT)							
Dump Truck		HR	$29			6	$174
Attenuator Truck Attachment		HR	$3.36			6	$20.16
Sign Board		HR	$6			6	$36
Pick-up Truck		HR	$8.08			6	$48.48
Crew cab stakebed		HR	$16.58			6	$99.48
Maintenance of Traffic (For INDOT)							
Shoulder		HR					
Median		HR					
Single Lane Closure		HR					
On Bridge		HR					
FLAT FEES							
Administration Fee (10%)							$285.20
Mobilization		EA					
Crash Documentation (Pre or Post)		EA					
Clean Up (Just Repair/Replacement Materials....not vehicular damage)		EA					
Obtaining Crash Report		EA					
	COST ESTIMATE				**$2,004.41**		
	ACTUAL COST						**$3,137.25**

2

Form M-54

Figure 5.9: Revised M54 page 2

the manager would coordinate their efforts to run efficiently by ensuring practices were standardized and communication was constant and clear.

An invaluable tool for the owner would be performance measures of the process. The dates, amounts, and locations of the M54s must be recorded for performance measures to be available. The performance measures of the elapsed time between the crash and the M54, and the time duration between the M54 and invoice evaluate the efficiency in the process (Figure 3.7). Other performance measures such as the invoice amount versus collections Figure 2.6) and the

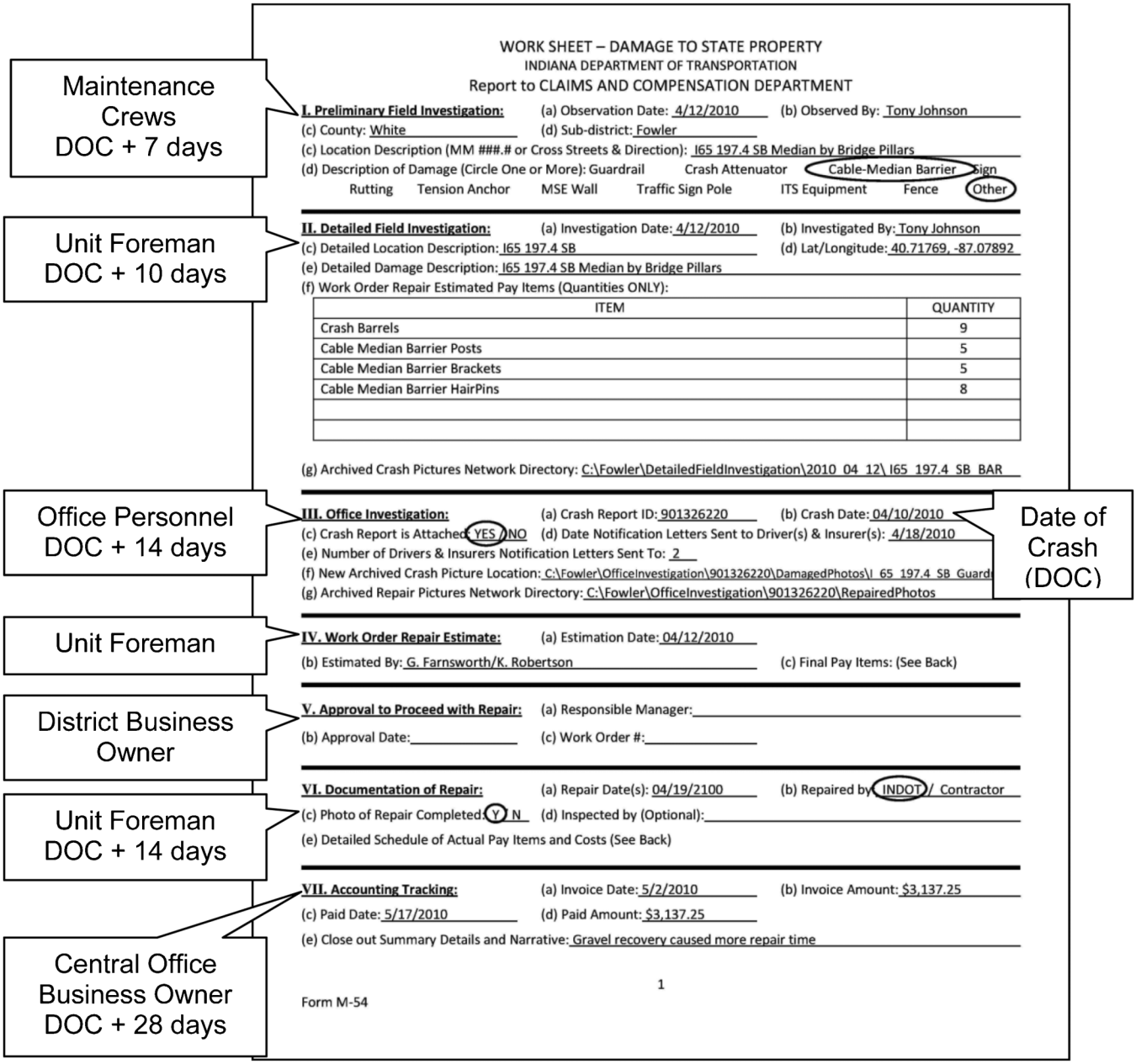


Figure 5.10: Target days after crash for the revised form M54

Figure 5.11: Example GPS camera

distribution of aged receivables (Figure 3.18) evaluate the recovery process as a whole.

5.6. Conclusions

It is believed the proposed crash repair cost recovery process reduces the time to receive reimbursement for repairs of DSP. This is accomplished by providing a revised M54 that mirrors the proposed business process. The maintenance crews begin the M54 to initiate when DSP is identified. A tag marking the DSP and reading the crash report ID number provides immediate association to the responsible party. In the process of the repair, time-stamped photos are taken of

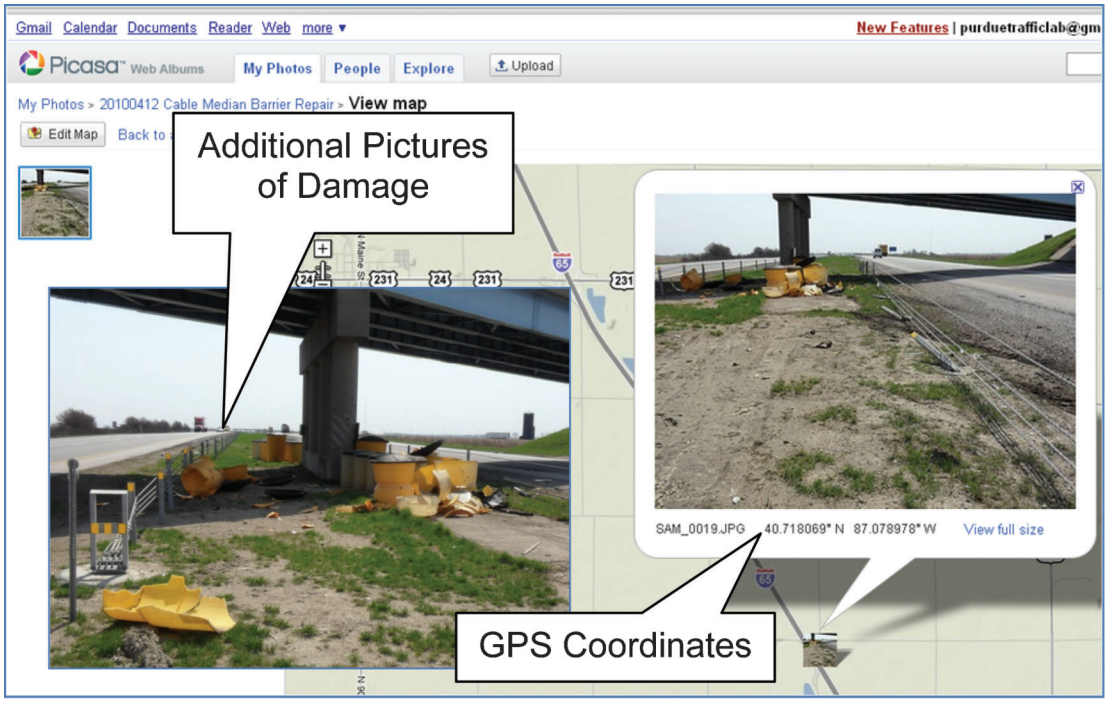


Figure 5.12: Photos with GPS coordinates of the crash site

a) Include mile marker or landmark in picture

b) Vehicle identifiers such as a license plate

c) Vehicle identifiers such as car type indicators

Figure 5.13: Documenting damage data at crash site

crash damage, repair work, and final repairs showing location and vehicle clues. The repair amount includes an administrative fee to represent fully-loaded costs. These modifications were described in detail so they could be consistently practiced in INDOT districts.

CHAPTER 6. PROPOSED BUSINESS PROCESS WITH CONTRACTOR

In the future, the contractor's role could be expanded to provide more administrative responsibilities. Many of the costs internalized by INDOT are investigating crash sites, processing the M54 and invoice and pursuing collections. A contractor in current maintenance contracts integrates the labor and equipment fees with the material line items. The costs internalized by INDOT could be transferred to the contractor who could include those costs in their line item charges.

6.1. Best Practices from the Fort Wayne District

'The Fort Wayne district' has recently added special provisions in their maintenance contract (Figure 6.1) that require the contractor to supply pictures for the repair and the crash damage (Figure 6.2) and fill out the M54 (Figure 6.3). The additional labor cost for the contractor to perform these tasks is reflected in the material line item costs. The M54 was requested to be sent as an excel sheet so INDOT can include its repair costs such as supervision, inspection, MOT, etc. as shown in Figure 6.4.

The ARIES database has a subscription fee for users outside of INDOT. The yearly subscription fee for

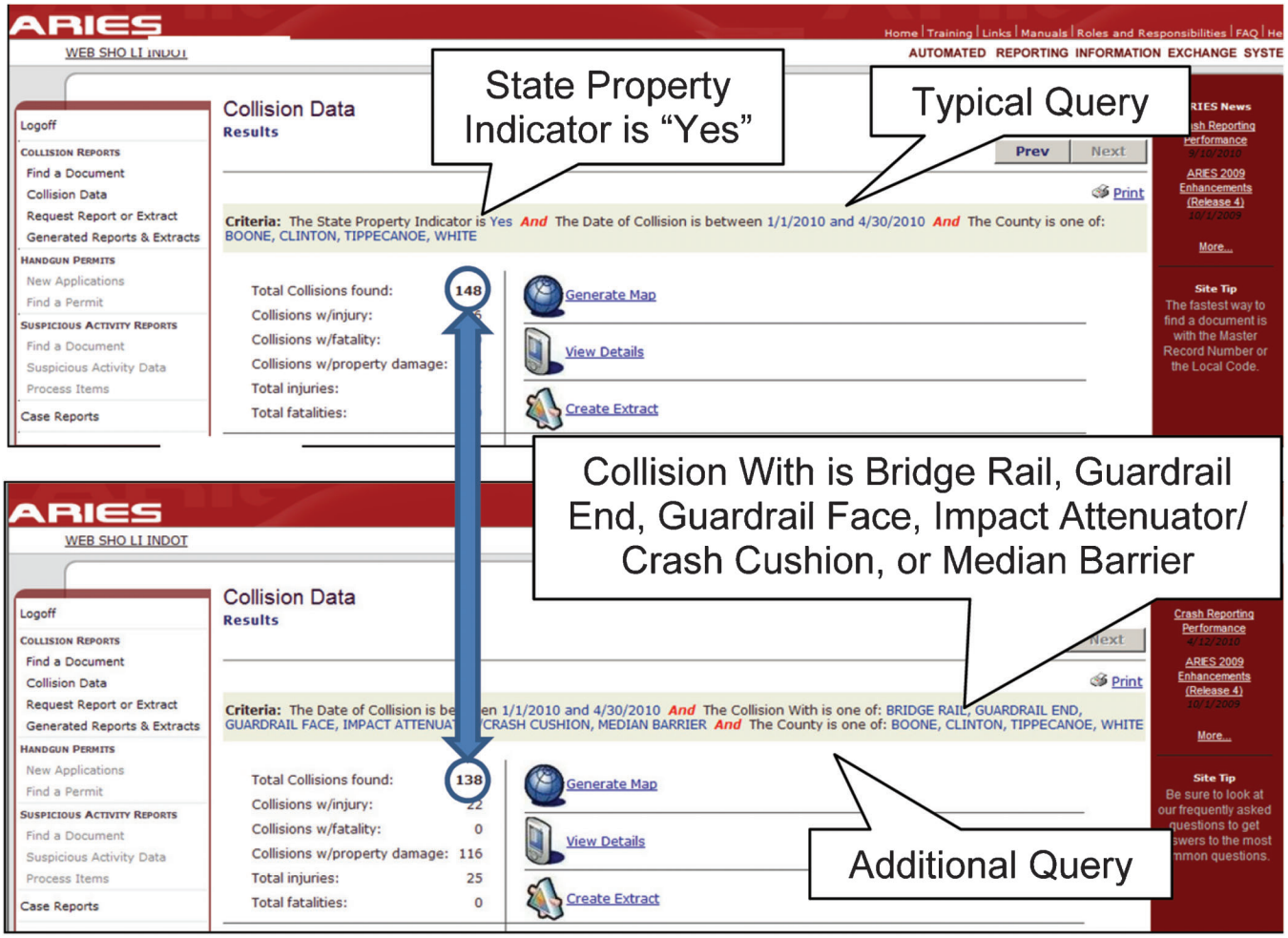


Figure 5.14: Example of the two queries for crashes with DSP

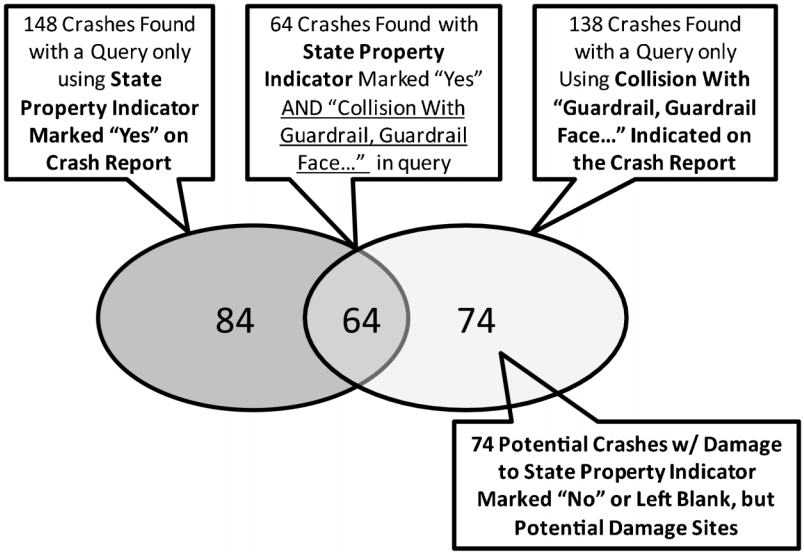
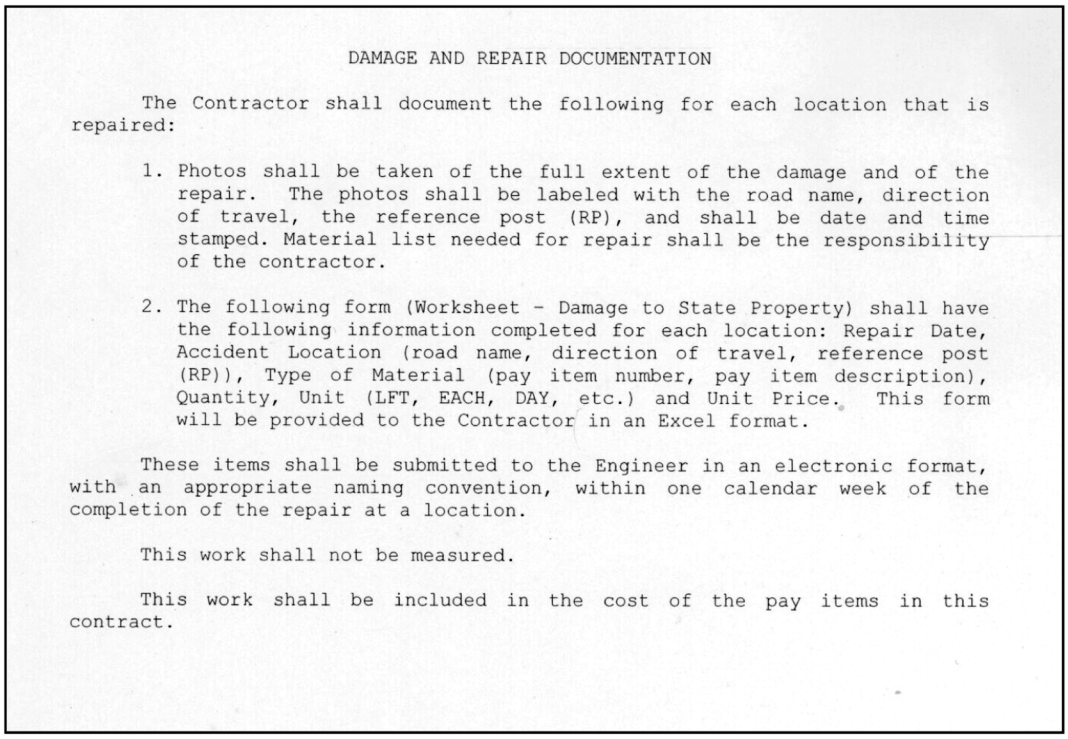


Figure 5.15: Potential amount of DSP crashes identified using both query tools (1/1/2010 – 4/30/2010) for Boone, Clinton, Tippecanoe and White counties



DAMAGE AND REPAIR DOCUMENTATION

The Contractor shall document the following for each location that is repaired:

1. Photos shall be taken of the full extent of the damage and of the repair. The photos shall be labeled with the road name, direction of travel, the reference post (RP), and shall be date and time stamped. Material list needed for repair shall be the responsibility of the contractor.

2. The following form (Worksheet - Damage to State Property) shall have the following information completed for each location: Repair Date, Accident Location (road name, direction of travel, reference post (RP)), Type of Material (pay item number, pay item description), Quantity, Unit (LFT, EACH, DAY, etc.) and Unit Price. This form will be provided to the Contractor in an Excel format.

These items shall be submitted to the Engineer in an electronic format, with an appropriate naming convention, within one calendar week of the completion of the repair at a location.

This work shall not be measured.

This work shall be included in the cost of the pay items in this contract.

Figure 6.1: Special provisions included in district repair maintenance contract (Fort Wayne)

statewide access is $24,000 ($2,000/month). There were 1,376 invoices sent in 2008 and 1,444 invoices sent in 2009. A fee of approximately $20 per invoice could cover the direct subscription cost for a contractor.

6.2. Competitive Outsourcing Contractual Challenges

The challenges of competitively outsourcing the crash repair cost recovery process are:

- transferring risk to the contractor for repairing DSP
- approving damage needed to be repaired versus insignificant hits
- evaluating the contractor's effort to collect from the insurance/driver before INDOT reimburses the contractor
- awarding the integrated manage/repair/collect contract

A higher risk will result in an increase in the contractor's prices. A repair site could be approved by INDOT by sending in crash damage pictures prior to beginning repair. INDOT can estimate the repairs for the guardrail from the crash pictures to assure that the contractor does not install unneeded material. A copy of the M54 and picture of the repair will be given to INDOT to approve the repair costs before being invoiced.

All crashes causing DSP that are not associated to a crash report are paid by INDOT. To assure contractors sufficiently seek payment from insurance/drivers, INDOT can stipulate that it will pay a lower percentage of the repair cost to give incentives to the contractor to pursue payment directly from the insurance company or driver. On the other hand, INDOT could pay a bonus for repairs paid by the responsible parties. Another incentive could be to refuse considering payment until a specified period, say three months, after the repair.

6.2.1. Bidding an Integrated Manage-Repair-Collect Contract

Ultimately, it may be possible to develop an integrated manage-repair-collect contract that be competitively bid and awarded. Such a contract would be quite innovative and warrants careful consideration. If such an approach is pursued further, it is recommended that interviews be conducted with the contractor responsible for the 2010–2011 Boone County added travel lanes projects. Part of the pilot tagging project covered this corridor. In fact, Figure 5.5, Figure 5.6, and Figure 5.7 shows photos obtained by a contractor representative (Dan Rogers) that were subsequently used by contractor to seek reimbursement from the responsible part for repairing the sign damaged on a roadway they were still responsible for maintaining (final acceptance had not occurred on data of crash).

6.3. Conclusions and Recommendations

INDOT could reduce labor and material costs not by competitively outsourcing the process. The complete crash repair cost recovery process can be broken down

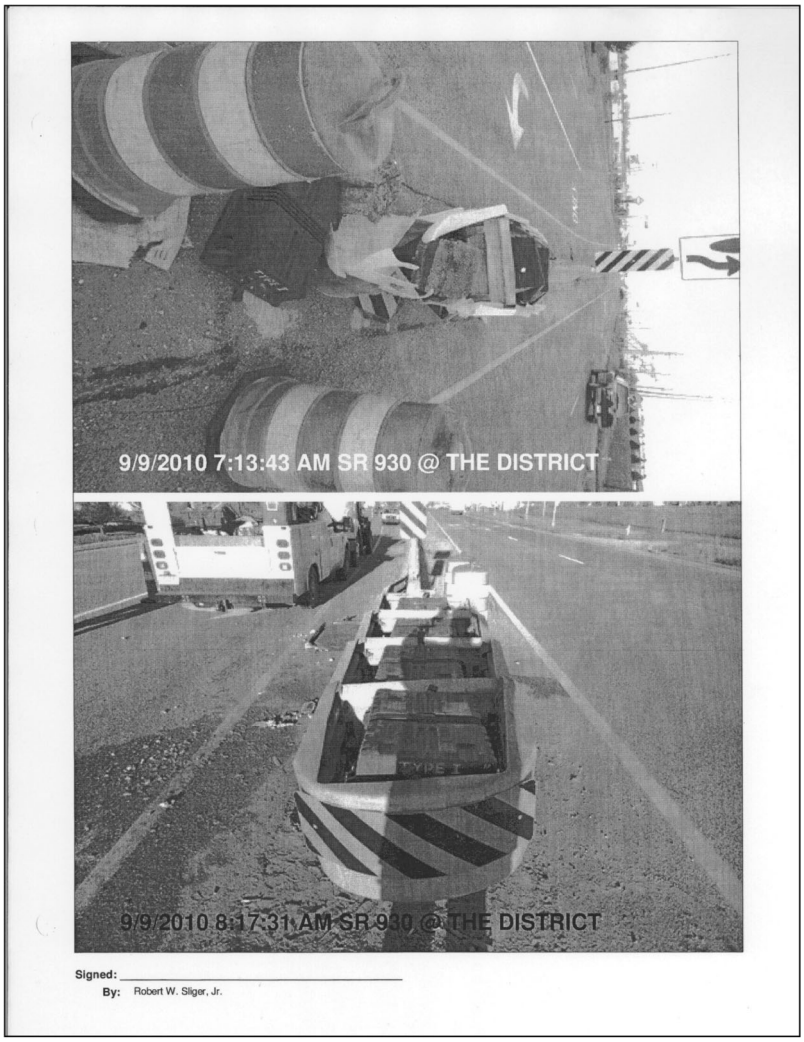


Figure 6.2: Example pictures taken and labeled by contractor (Fort Wayne District)

Form M-54

WORK SHEET - DAMAGE TO STATE PROPERTY

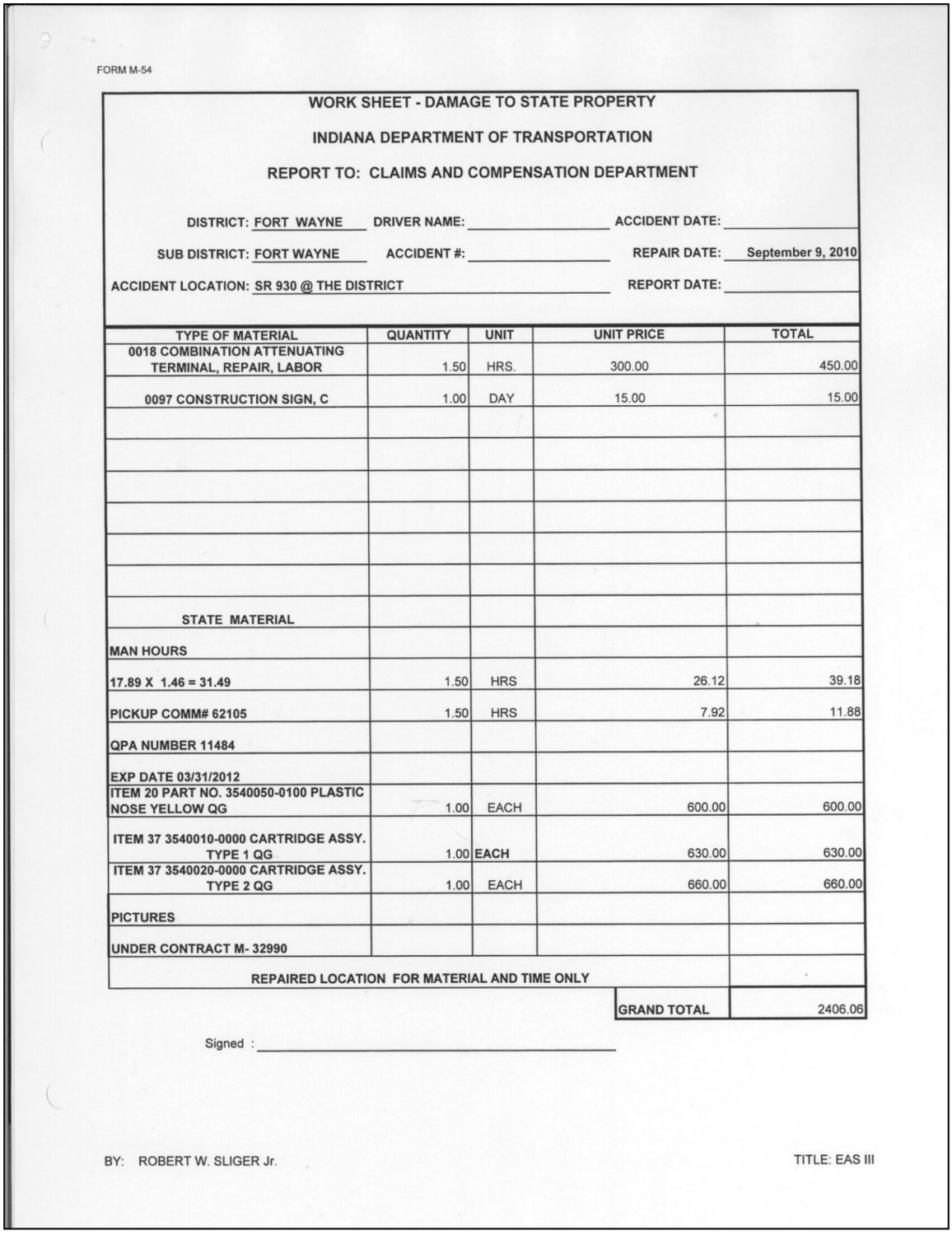
INDIANA DEPARTMENT OF TRANSPORTATION

REPORT TO: CLAIMS AND COMPENSATION DEPARTMENT

DISTRICT: Fort Wayne	DRIVER NAME:	ACCIDENT DATE:	
SUB DISTRICT:	ACCIDENT #:	REPAIR DATE:	9/9/2010
ACCIDENT LOCATION: SR 930 @ THE DISTRICT		REPORT DATE:	

0018 - COMBINATION ATTENUATING TERMINAL, REP	1.5 HRS.	$300.00	$450.00
		GRAND TOTAL:	**$450.00**

Figure 6.3: M54 filled out by contractor (Fort Wayne District)



FORM M-54

WORK SHEET - DAMAGE TO STATE PROPERTY

INDIANA DEPARTMENT OF TRANSPORTATION

REPORT TO: CLAIMS AND COMPENSATION DEPARTMENT

DISTRICT: FORT WAYNE DRIVER NAME: _____ ACCIDENT DATE: _____

SUB DISTRICT: FORT WAYNE ACCIDENT #: _____ REPAIR DATE: September 9, 2010

ACCIDENT LOCATION: SR 930 @ THE DISTRICT REPORT DATE: _____

TYPE OF MATERIAL	QUANTITY	UNIT	UNIT PRICE	TOTAL
0018 COMBINATION ATTENUATING TERMINAL, REPAIR, LABOR	1.50	HRS.	300.00	450.00
0097 CONSTRUCTION SIGN, C	1.00	DAY	15.00	15.00
STATE MATERIAL				
MAN HOURS				
17.89 X 1.46 = 31.49	1.50	HRS	26.12	39.18
PICKUP COMM# 62105	1.50	HRS	7.92	11.88
QPA NUMBER 11484				
EXP DATE 03/31/2012				
ITEM 20 PART NO. 3540050-0100 PLASTIC NOSE YELLOW QG	1.00	EACH	600.00	600.00
ITEM 37 3540010-0000 CARTRIDGE ASSY. TYPE 1 QG	1.00	EACH	630.00	630.00
ITEM 37 3540020-0000 CARTRIDGE ASSY. TYPE 2 QG	1.00	EACH	660.00	660.00
PICTURES				
UNDER CONTRACT M- 32990				
REPAIRED LOCATION FOR MATERIAL AND TIME ONLY				
			GRAND TOTAL	2406.06

Signed : _____

BY: ROBERT W. SLIGER Jr. TITLE: EAS III

Figure 6.4: M54 filled out by INDOT (Fort Wayne District)

into several tasks that could be outsourced in portions. It is proposed that pilot programs be used to phase in competitive outsourcing or introduce new tasks for contractors in stages.

CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS

Based on the research, the low median invoice cost of $419 does not properly reflect the actual fully-loaded

cost to repair damaged state property that should include overhead and administrative costs. There is also a large disparity between the total amount invoiced and amount recovered. To address these needs, this study focused on the following:

- Identify opportunities to increase the percent of invoices collected
- More effectively associating vehicle crash reports with crash damaged infrastructure
- Decreasing the process time
- Ensuring that invoices reflect the fully-loaded repair cost

A summary of the recommendations determined from this report are

1. Implement the revised M54 (Chapter 5)
2. Implement a tagging system for law enforcement to identify damage while at a crash site (Chapter 5)
3. Train district on best practices for ARIES database queries
4. Send a notification letter to the driver and insurance company when their information is located and associated to the crash damage
5. Include an administrative and overhead fee on the invoice
6. Identify key stakeholders/owners of the process
7. Establish district performance measures for assessing

- Elapsed time from the date of crash to the date the revised M54 is completed
- Elapsed timed from the revised M54 to invoice
- Aged receivable report
- Invoice versus collection amount

These recommendations are described further in the remainder of this chapter.

7.1. Recommendation 1: Revision of M54 Form

This report strongly recommends implementing a revised M54 as shown in Figure 5.8 and Figure 5.9, and described in Chapter 5. The revised M54 guides stakeholders to include the full repair costs and follow consistent practices. Ideally, this would be a web based form that supports digital photo uploads.

7.2. Recommendation 2: Damage Tagging System

Implementation of a law enforcement tagging system is strongly recommended and used in Minnesota, Florida, and North Carolina because of the potential to immediately associate crash damaged infrastructure to a crash report. The need for a crash report query is minimized if a tag or decal marks the damage to state property. The tag/decal (Figure 4.3) shows the crash report identification number and crash date which reduce uncertainty who is the responsible party.

7.3. Recommendation 3: Maintenance Crew Notification

This report recommends that the maintenance crews note the tag damage they identify on INDOT routes by taking a picture with a time stamp and GPS location associated to the picture. At this point, the maintenance crew should start the revised M54 process as described in Chapter 5.

7.4. Recommendation 4: Increasing Query Capability

This report recommends using two queries to search for crash reports as shown in Figure 5.14 before tagging is implemented. A selected application of the query has increased the potential invoice amount state wide by approximately $89,000 for only 3½ months of the year. The first query includes the date range, counties within jurisdiction and the state property indicator marked "yes." The other query searches the criteria with the same date range and counties, but selects "Collision with" and highlights "bridge rail, guardrail end, guardrail face, impact attenuator/crash cushion, and median barrier." The second query was not consistently used by all INDOT districts.

7.5. Recommendation 5: Early Notification to Driver/ Insurance Company

The Oregon Department of Transportation sends a letter to the driver and/or insurance company once their contact information has been identified as seen in Figure 4.9 and Figure 4.10. The letter notifies them that damages are being inspected and they may be billed for repair costs. A driver and/or insurance company aware of the pending infraction will be more likely to pay the invoice. This report recommends INDOT adapt a similar practice. A special procedure should be implemented to expedite the crash repair recovery process for property damage that is projected to be large (say over $50,000) as indicated on the crash report.

7.6. Recommendation 6: Recovering Fully-Loaded Costs

The Michigan Department of Transportation applies to their invoice a flat administration fee of 28.73% as part of their repair costs, Figure 2.17. INDOT does not include an overhead or administration fee. This report proposes an administration and overhead fee be added to the invoice to capture the repair costs incurred by INDOT.

7.7. Recommendation 7: Key Stakeholders and Owners

The personnel responsible for each phase of the crash repair recovery process need to be identified for each district. An owner or manager should be appointed to oversee that the system is operating efficiently and coordinates the efforts between the distinct stages. They could review the performance measures of their district and sub-districts to determine where improvements are needed. A single process owner assures that recovery practices are consistent throughout the district.

7.8. Recommendation 8: Performance Measures

This report recommends that the state establish four performance measures to evaluate the crash repair cost recovery process:

- Elapsed time between the crash date and completing the revised M54
- Elapsed time between the revised M54 and the invoice sent
- A distribution of aged receivables
- Invoice versus collection amount

Each performance measure evaluates the efficiency of certain stages of the crash repair cost recovery process. The performance measures could be applied on the state, district or sub-district level if the dates, amounts and areas are recorded.

7.9. Future Research

An alternative to in-house repairs is competitive outsourcing of the repair work. The responsibility of the contractor in addition to making the repairs would be the administration management of the paperwork necessary to recover payment from the responsible parties of crashes with DSP. The costs that are not reimbursed by insurance companies and/or the driver would continue being paid from the INDOT maintenance budget, limiting the risk to the contractor. There are many challenges in contractual organization and task designation that need to be addressed before competitive outsourcing could be implemented.

7.10. Closing

The current INDOT crash repair cost recovery process collects over $1 million each year, but could consistently collect a larger amount by standardizing best management practices throughout the agency. This report recommends practices that have been piloted in Indiana or have been implemented in peer states with positive results. The main benefits expected from these recommendations are an increase in invoice collection rates, increase in the number of invoices due to better association between the crash report and DSP, and an increase in the invoice amount per crash by applying and overhead and administration fees.

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APPENDIX

Hello,

My name is Alex [redacted] and I'm a graduate student from Purdue University. We are currently studying the Indiana DOT process to recover costs associated with repairing guardrail and other infrastructure damaged by motor vehicle crashes. We are trying to identify practices used by other agencies to recover costs of repairing damaged infrastructure along roadways. We are specifically reviewing damaged infrastructure such as guardrail, signs, and crash attenuators. We are interested in comparing Indiana's DOT method to initiate the cost recovery process to other agencies. INDOT currently begins their cost recovery process by querying crash reports on a state maintained crash database. Here are a few questions that would greatly help us with this study:

Question 1: What mechanism in your agency is used for a trigger to start a file for obtaining reimbursement for damages associated with a motor vehicle crash? Some examples may include field observations, crash report queries, or calls from public safety officials and/or concerned citizens.

Question 2: Do you have a formal process (a form or procedure) used to document crash repair costs and recover those from the vehicle owner or insurance company? If a form is used, could we obtain a copy?

If you don't have these answers, would you please let me know who would know or forward this email to the appropriate department? Any reply to this email may be sent to a[redacted]@purdue.edu. Please feel free to give me a call at (765) [redacted] with any questions or concerns you may have.
Thank you for your time and insight.

[redacted]

Figure A.1: May 2010 survey for US states

XXXXXXX,

Thank you for your response to our questions concerning the cost recovery process for crash-damaged state-owned infrastructure. To date we have received a comprehensive response from 26 states and lots of requests to share information. We are following-up for two reasons:

1. To share the data we have collected and facilitate interaction; we have scheduled a webinar for Wednesday September 15, 2010 at 1 pm (NY Time). To access the webinar please go to https://gomeet.itap.purdue.edu/claims/. The accompanying audio will be on a teleconference (1-605-475-6333 PIN# 931819) that will permit interactive Q&A following the short presentation of results.

2. The information we received has been extremely helpful for our study. However, the responses varied greatly so we have included a follow-up list of questions to help us more accurately document the state of the practice to identify best practices for identifying and processing claims.

Please reply to this email with responses in the space immediately following each question. If you have already provided the requested information for a particular question in a previous e-mail or conversation, please skip to the next question.

The additional questions are as follows:

1. With reference to your claims damage invoice, what are the rates or amounts you add to your direct labor costs?

   a. Fringe Benefits (e.g. worker insurance)

   b. General agency overhead

   c. Administrative fee for legal services, filing fees, collections, etc.?

   d. Other fees [Please describe] (Y/N)

2. Can we receive an example letter of your invoice letter and/or worksheet of repair costs if you have not already sent one to us?

3. If maintenance crews are used to trigger the cost recovery process, approximately how often do the crews complete their route circuit looking for crash damage? (e.g. weekly, 2 times/month, etc.)

4. Are crash reports used to identify opportunities to recover repair costs? How often is the database queried for damaged infrastructure?

5. Do you use penalties or payment incentives to encourage on-time invoice payments (Y/N) (e.g. if 10-days late, a penalty fee is applied)?

   a. If 'Yes', please describe and provide percent rate/amount

Figure A.2: July 2010 survey for US states

6. Is there a min cost to start the recovery process (Y/N)? _____ (amount)

7. Is there a min cost to forward a claim to a collection agency (Y/N)? _____ (amount)

8. On an annual basis, could you estimate the amount invoiced?

   a. What is the approximate successful rate for collections per year?
      _____ rate by percent or amount?

Please feel free to contact me at (801) [redacted] if you should have any questions or require additional information. A follow up reminder will be sent prior to the webinar. Thank you for all of your help.

[redacted]
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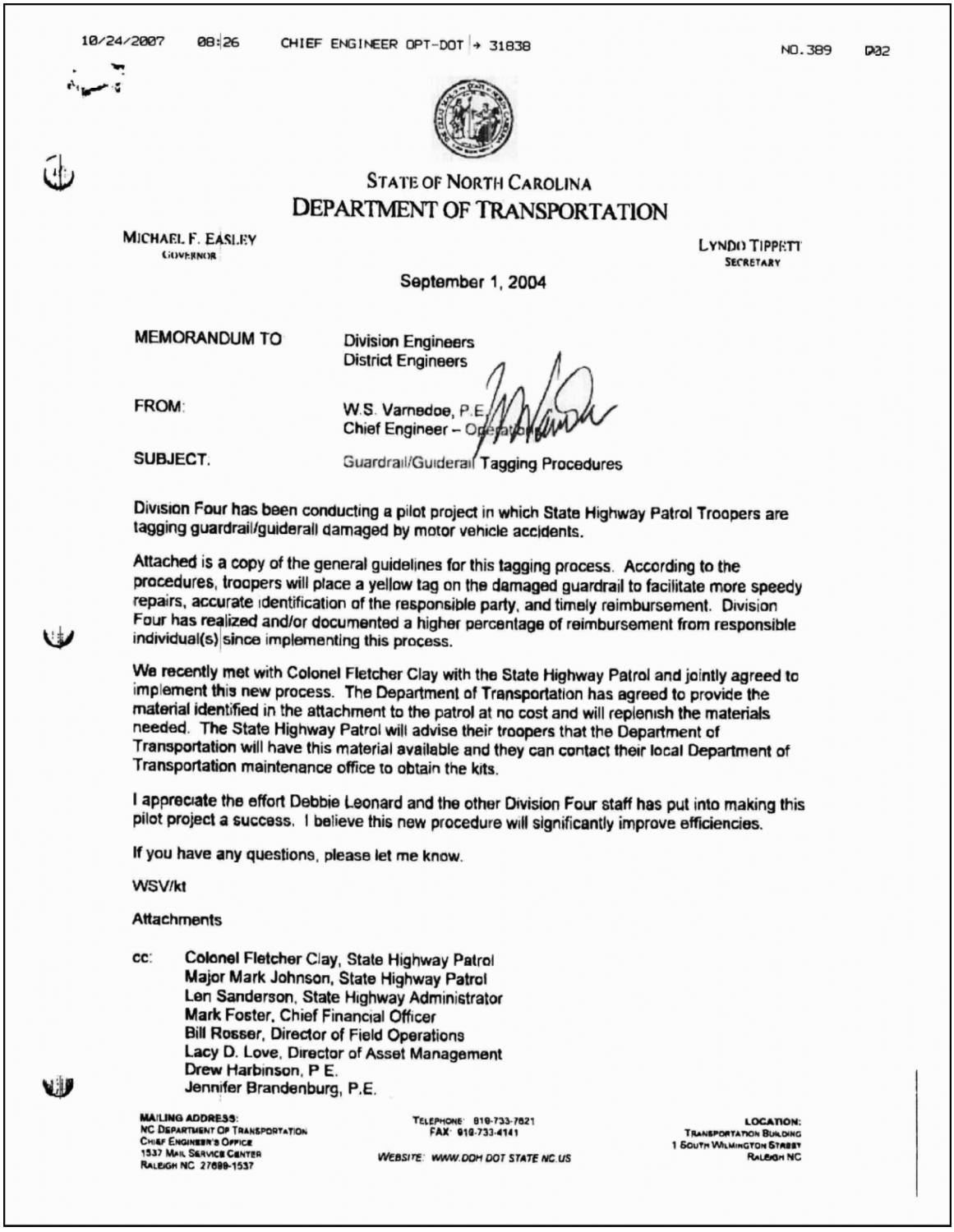
School of Civil Engineering
550 Stadium Mall Drive
West Lafayette, IN 47907-2051
[redacted]@purdue.edu



10/24/2007 08:26 CHIEF ENGINEER OPT-DOT → 31838 NO.389 D02

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 1, 2004

MEMORANDUM TO Division Engineers
District Engineers

FROM: W.S. Varnedoe, P.E.
Chief Engineer – Operations

SUBJECT: Guardrail/Guiderail Tagging Procedures

Division Four has been conducting a pilot project in which State Highway Patrol Troopers are tagging guardrail/guiderail damaged by motor vehicle accidents.

Attached is a copy of the general guidelines for this tagging process. According to the procedures, troopers will place a yellow tag on the damaged guardrail to facilitate more speedy repairs, accurate identification of the responsible party, and timely reimbursement. Division Four has realized and/or documented a higher percentage of reimbursement from responsible individual(s) since implementing this process.

We recently met with Colonel Fletcher Clay with the State Highway Patrol and jointly agreed to implement this new process. The Department of Transportation has agreed to provide the material identified in the attachment to the patrol at no cost and will replenish the materials needed. The State Highway Patrol will advise their troopers that the Department of Transportation will have this material available and they can contact their local Department of Transportation maintenance office to obtain the kits.

I appreciate the effort Debbie Leonard and the other Division Four staff has put into making this pilot project a success. I believe this new procedure will significantly improve efficiencies.

If you have any questions, please let me know.

WSV/kt

Attachments

cc: Colonel Fletcher Clay, State Highway Patrol
Major Mark Johnson, State Highway Patrol
Len Sanderson, State Highway Administrator
Mark Foster, Chief Financial Officer
Bill Rosser, Director of Field Operations
Lacy D. Love, Director of Asset Management
Drew Harbinson, P E.
Jennifer Brandenburg, P.E.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
CHIEF ENGINEER'S OFFICE
1537 MAIL SERVICE CENTER
RALEIGH NC 27699-1537

TELEPHONE: 919-733-7621
FAX: 919-733-4141
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Figure A.3: North Carolina pilot program memorandum

GUARDRAIL/GUIDERAIL TAGGING PROCEDURE

1. Troopers receive a Guardrail Tag Bag, containing 25 Tags, 25 Plastic Ties and a waterproof marker. (Additional bags, tags, ties and markers will be available from the local CME office).

2. After a crash has occurred and after their investigation is complete, Troopers complete the information on the tag and attach the tag to the damaged area. (Ties can be combined to reach around bigger sections of guardrail). The type of information that is included on the tag is from the collision report (DMV-349) and includes:

   - Date/Time of Crash
   - Sequence Number
   - Vehicle information
     - Make/model
     - Lic. Tag
     - Estimated Damage (Ft)
     - Officer
     - Agency

3. A basket is located at the State Highway Patrol office where a copy of the report is placed for the DOT inspector to pick up. These reports are picked up on a routine basis (Daily in some areas). Areas of damage that would require immediate attention from DOT are reported by phone to the county in which the damage occurred and is tagged.

4. DOT inspector obtains the reports and matches the tags on site with the appropriate (DMV-349) report. The sequence number from the report is on the tag. An inspector can also request a report based on the information that he obtains from a tag. (This occurs if the inspector sees the damage before a report has been completed). After the damage is located, the inspector completes his estimate of the quantities to give to the contractor and initials the back of the tag. The tag remains on the area of damage until repairs are made to eliminate duplicating estimates and billing. The inspector assigns the work to a contractor to complete with the appropriate information. The contractor can then remove the tag when the repairs have been completed.

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

I. Preliminary Field Investigation: (a) Observation Date: _____ (b) Observed By: _____
(c) County: White (d) Sub-district: Fowler
(e) Location Description (MM ###.# or Cross Streets & Direction): US231 CR800N (185.5) SB (Eside)
(f) Description of Damage (Circle One or More): Guardrail Crash Attenuator Cable-Median Barrier Sign
Rutting Tension Anchor MSE Wall Traffic Sign Pole ITS Equipment Fence Other

II. Detailed Field Investigation: (a) Investigation Date: 2/11/2010 (b) Investigated By: Grant Farnsworth
(c) Detailed Location Description: US231 CR800N (185.5) SB (Eside) (d) Lat/Longitude: 40.16158, -87.9054
(e) Detailed Damage Description: Guardrail hit on east side, debris found on side of road; no identifiers
(f) Work Order Repair Estimated Pay Items (Quantities ONLY):

ITEM	QUANTITY
Guardrail Steel Beam Galvanized (LF)	100
Guardrail Post Bracket	25
Guardrail Post	20
Guardrail Post Plumb	15
INDOT Estimate/Inspection	?
Other contractor costs (e.g. traffic control, mobilization)	?

(g) Archived Crash Pictures Network Directory: C:\Fowler\DetailedFieldInvestigation\2010_02_11\US231_CR800N_Eside_GR

III. Office Investigation: (a) Crash ID: 901272115 (b) Crash Date: 01/20/2010
(c) Crash Record is Attached: YES / NO (d) Date Notification Letters Sent to Driver(s) & Insurer(s): _____
(e) Number of Drivers & Insurers Notifications Letters Sent To: ___
(f) Archived Repair Pictures Network Directory: C:\Fowler\OfficeInvestigation\901272115\RepairedPhotos
(g) New Archived Crash Picture Location: C:\Fowler\OfficeInvestigation\901272115\DamagedPhotos\US231_CR800N_Eside_GR

IV. Work Order Repair Estimate: (a) Estimation Date: 02/18/2010
(b) Estimated By: G. Farnsworth/V. VanAllen (c) Final Pay Items: (See Back)

V. Approval to Proceed with Repair: (a) Responsible Manager: _____
(b) Approval Date: _____ (c) Work Order #: _____

VI. Documentation of Repair: (a) Repair Date(s): _____ (b) Repaired by: INDOT / Contractor
(c) Photo of Repair Completed: Y / N (d) Inspected by (Optional): _____
(e) Detailed Schedule of Actual Pay Items and Costs (See Back)

VII. Accounting Tracking: (a) Invoice Date: ??? (b) Invoice Amount: $2,451
(c) Paid Date: _____ (d) Paid Amount: _____
(e) Close out Summary Details and Narrative: _____

Form M-54

Figure A.4 US231 CR800N invoice

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

				Work Order Repair Estimate		Actual Repair	
Description	Contract Item #	Unit	Unit Cost	Quantity	Estimate Cost	Quantity	Total Cost
GUARDRAIL Materials							
Guardrail Steel Beam Galvanized	34	LF	$8.60	100	$860	125	$1075
Guardrail Post Bracket, 8.5 lb/LF, Galvanized	29	EA	$19	25	$475	16	$304
Guardrail Post, 8.5 lb/LF, 7' long, Galvanized	14	EA	$63	20	$1260	16	$1008
Guardrail Post Plumb	42	EA	$16	15	$240	4	$64
CRASH ATTENUATOR Materials							
		EA					
CABLE-MEDIAN BARRIERS Materials							
CMB Terminal Post		EA					
CMB HairPin		EA					
CMB LockPlate		EA					
CMB Tension Adjustment		EA					
Labor (with Benefits) (For INDOT)							
Foreman		HR					
Super		HR					
Laborer		HR					
Flagman		HR					
Equipment (For INDOT)							
Dump Truck		HR					
Attenuator Truck		HR					
Sign Board		HR					
Pick-up Truck		HR					
Maintenance of Traffic (For INDOT)							
Shoulder		HR					
Median		HR					
Single Lane Closure		HR					
On Bridge		HR					
FLAT FEES							
Mobilization		EA					
Crash Documentation (Pre or Post)		EA					
Clean Up (Just Repair/Replacement Materials....not vehicular damage)		EA					
Obtaining Crash Report		EA					
OTHER							
		COST ESTIMATE			**$3,105**		
		ACTUAL COST					**$2,451**

Form M-54

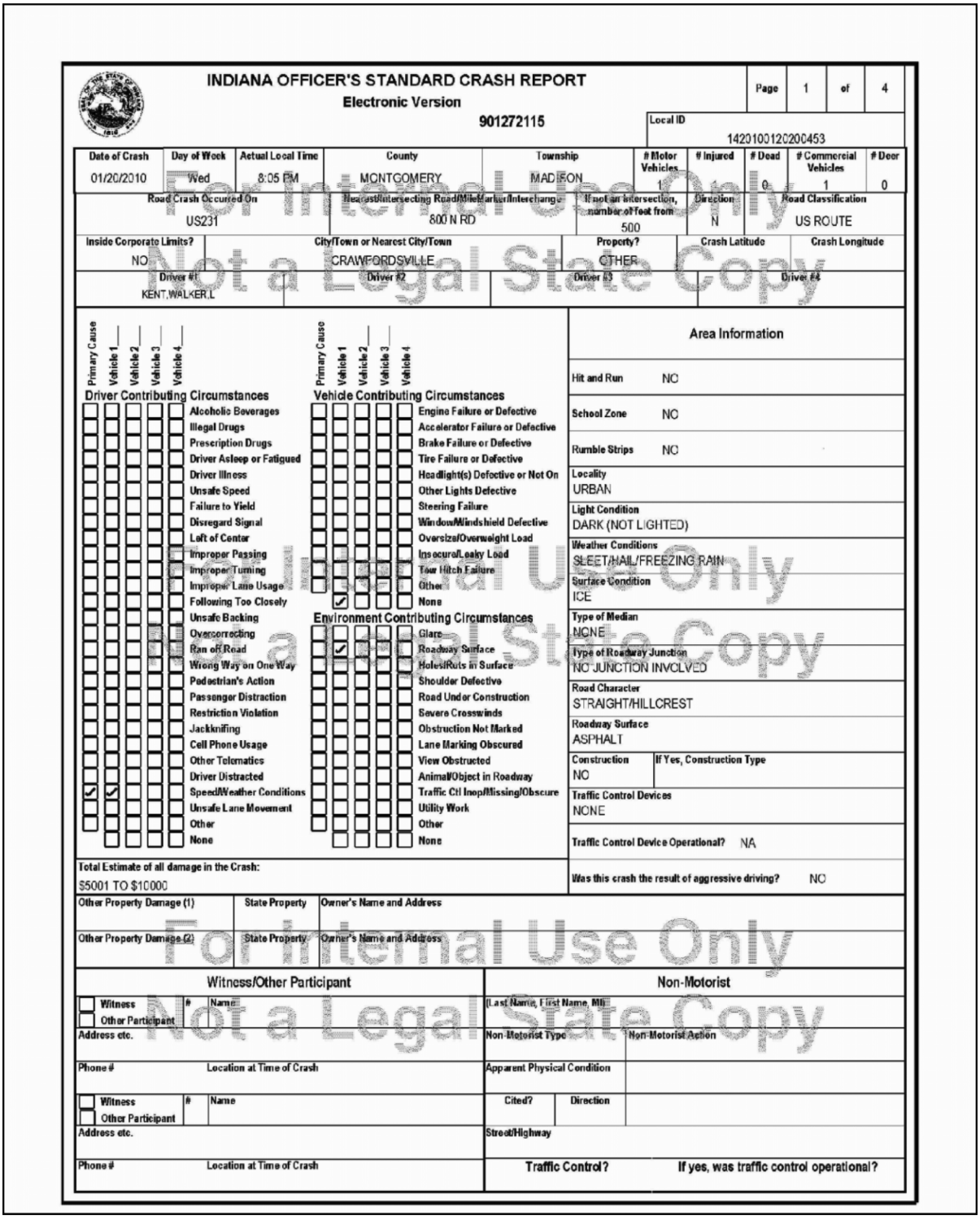
CRASH PHOTOS

Figure 1: US231 SB; East Side: MM: ~185.5; Damaged Guardrail Posts; Photo Facing North

Figure 2: US231 SB; East Side: MM: ~185.5; Damaged Guardrail; Photo Facing Southeast

Figure 3: US231 SB; East Side: MM: ~185.5; Repaired Guardrail; Photo Facing East

Figure 4: US231 SB; East Side: MM: ~185.5; Repaired Guardrail Posts and Sod; Photo Facing North



INDIANA OFFICER'S STANDARD CRASH REPORT

Electronic Version

Page 1 of 4

901272115

Local ID: 1420100120200453

Date of Crash	Day of Week	Actual Local Time	County	Township	# Motor Vehicles	# Injured	# Dead	# Commercial Vehicles	# Deer
01/20/2010	Wed	8:05 PM	MONTGOMERY	MADISON	1	1	0	1	0

Road Crash Occurred On	Nearest/Intersecting Road/Mile Marker/Interchange	If not an intersection, number of feet from	Direction	Road Classification
US231	800 N RD	500	N	US ROUTE

Inside Corporate Limits?	City/Town or Nearest City/Town	Property?	Crash Latitude	Crash Longitude
NO	CRAWFORDSVILLE	OTHER		

Driver #1	Driver #2	Driver #3	Driver #4
KENT,WALKER,L			

Driver Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Alcoholic Beverages					
Illegal Drugs					
Prescription Drugs					
Driver Asleep or Fatigued					
Driver Illness					
Unsafe Speed					
Failure to Yield					
Disregard Signal					
Left of Center					
Improper Passing					
Improper Turning					
Improper Lane Usage					
Following Too Closely					
Unsafe Backing					
Overcorrecting					
Ran off Road					
Wrong Way on One Way					
Pedestrian's Action					
Passenger Distraction					
Restriction Violation					
Jackknifing					
Cell Phone Usage					
Other Telematics					
Driver Distracted					
Speed/Weather Conditions	✓	✓			
Unsafe Lane Movement					
Other					
None					

Vehicle Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Engine Failure or Defective					
Accelerator Failure or Defective					
Brake Failure or Defective					
Tire Failure or Defective					
Headlight(s) Defective or Not On					
Other Lights Defective					
Steering Failure					
Window/Windshield Defective					
Oversize/Overweight Load					
Insecure/Leaky Load					
Tow Hitch Failure					
Other					
None		✓			

Environment Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Glare					
Roadway Surface		✓			
Holes/Ruts in Surface					
Shoulder Defective					
Road Under Construction					
Severe Crosswinds					
Obstruction Not Marked					
Lane Marking Obscured					
View Obstructed					
Animal/Object in Roadway					
Traffic Ctl Inop/Missing/Obscure					
Utility Work					
Other					
None					

Area Information

Hit and Run	NO
School Zone	NO
Rumble Strips	NO
Locality	URBAN
Light Condition	DARK (NOT LIGHTED)
Weather Conditions	SLEET/HAIL/FREEZING RAIN
Surface Condition	ICE
Type of Median	NONE
Type of Roadway Junction	NO JUNCTION INVOLVED
Road Character	STRAIGHT/HILLCREST
Roadway Surface	ASPHALT
Construction	NO
If Yes, Construction Type	
Traffic Control Devices	NONE
Traffic Control Device Operational?	NA
Was this crash the result of aggressive driving?	NO

Total Estimate of all damage in the Crash: $5001 TO $10000

Other Property Damage (1)	State Property	Owner's Name and Address
Other Property Damage (2)	State Property	Owner's Name and Address

Witness/Other Participant

☐ Witness ☐ Other Participant	#	Name
Address etc.		
Phone #	Location at Time of Crash	
☐ Witness ☐ Other Participant	#	Name
Address etc.		
Phone #	Location at Time of Crash	

Non-Motorist

(Last Name, First Name, MI)	
Non-Motorist Type	Non-Motorist Action
Apparent Physical Condition	
Cited? / Direction	
Street/Highway	
Traffic Control?	If yes, was traffic control operational?

901272115

Local ID
1420100120200453

Type of Crash RAN OFF ROAD

Time Notified	Time Arrived	Other Location of Investigation
8:05 PM	8:12 PM	NA

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO
Assisting Officer	**ID No.**	**Agency**	**Date of Report**	
			01/20/2010	
Investigating Officer	**ID No.**	**Agency**	**Reviewing Officer**	
JACKSON, K	5011	ISP LAFAYETTE 14	A HAMPTON	

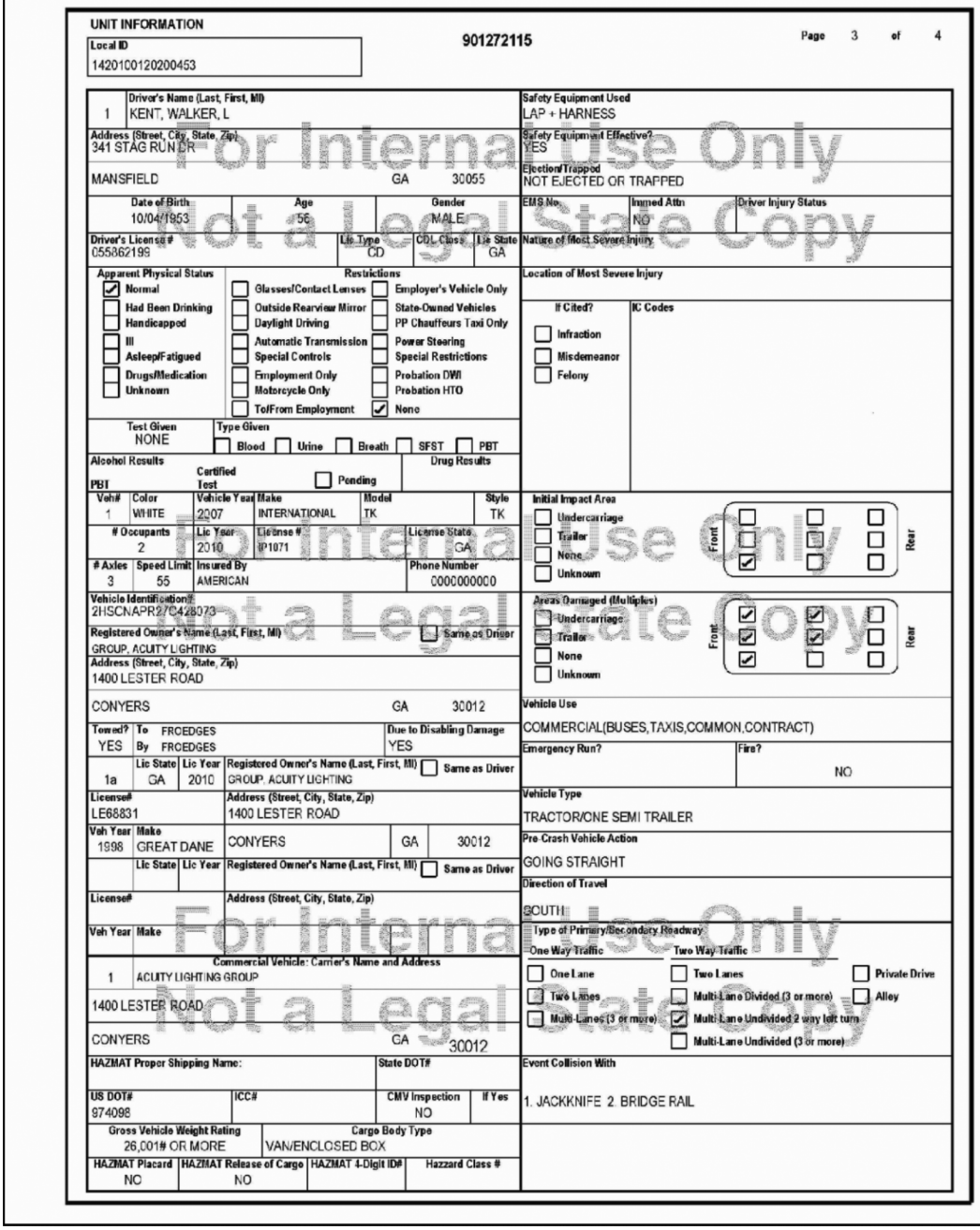
Narrative

On 1-20-2010 I was advised by Crawfordsville Dispatch that there was an accident involving a jack-knifed semi on US 231 south bound near County Road 800 north in Montgomery County. I arrived on scene and located the semi, which was blocking both lanes of travel and was jack-knifed on top of the guard rail. I spoke with, WALKER L KENT, the driver who stated that he was traveling southbound on US 231 and when he traveled onto the bridge just north of CR 800 north he began to lose control. Mr. Kent stated that he started to jack-knife then collided with the barrier wall.

I then spoke with, LARRY W KENT, who was sleeping in the sleeper bed of the truck. He stated that when they struck the barrier wall he was thrown from the bed and struck with falling debris.

Larry was transported to St. Clare Hospitol by EMS # 0687. He had complaint of pain in his neck and back.

The vehicle was removed by Froedge's Towing.



UNIT INFORMATION

Local ID: 1420100120200453

901272115

Page 3 of 4

1 Driver's Name (Last, First, MI): KENT, WALKER, L	Safety Equipment Used: LAP + HARNESS
Address (Street, City, State, Zip): 341 STAG RUN DR	Safety Equipment Effective?: YES
MANSFIELD GA 30055	Ejection/Trapped: NOT EJECTED OR TRAPPED
Date of Birth: 10/04/1953 / Age: 56 / Gender: MALE	EMS No. / Immed Attn: NO / Driver Injury Status
Driver's License #: 055862199 / Lic Type: CD / CDL Class / Lic State: GA	Nature of Most Severe Injury
Apparent Physical Status: [x] Normal; [ ] Had Been Drinking; [ ] Handicapped; [ ] Ill; [ ] Asleep/Fatigued; [ ] Drugs/Medication; [ ] Unknown	Restrictions: [ ] Glasses/Contact Lenses; [ ] Outside Rearview Mirror; [ ] Daylight Driving; [ ] Automatic Transmission; [ ] Special Controls; [ ] Employment Only; [ ] Motorcycle Only; [ ] To/From Employment; [ ] Employer's Vehicle Only; [ ] State-Owned Vehicles; [ ] PP Chauffeurs Taxi Only; [ ] Power Steering; [ ] Special Restrictions; [ ] Probation DWI; [ ] Probation HTO; [x] None	Location of Most Severe Injury
Test Given: NONE / Type Given: [ ] Blood [ ] Urine [ ] Breath [ ] SFST [ ] PBT	If Cited?: [ ] Infraction; [ ] Misdemeanor; [ ] Felony / IC Codes
Alcohol Results: PBT / Certified Test / [ ] Pending / Drug Results	
Veh# 1 / Color: WHITE / Vehicle Year: 2007 / Make: INTERNATIONAL / Model: TK / Style: TK	Initial Impact Area: [ ] Undercarriage; [ ] Trailer; [ ] None; [ ] Unknown
# Occupants: 2 / Lic Year: 2010 / License #: IP1071 / License State: GA	
# Axles: 3 / Speed Limit: 55 / Insured By: AMERICAN / Phone Number: 0000000000	
Vehicle Identification #: 2HSCNAPR27C428073	Areas Damaged (Multiples): [ ] Undercarriage; [ ] Trailer; [ ] None; [ ] Unknown
Registered Owner's Name (Last, First, MI): GROUP, ACUITY LIGHTING / [ ] Same as Driver	
Address (Street, City, State, Zip): 1400 LESTER ROAD	
CONYERS GA 30012	Vehicle Use: COMMERCIAL(BUSES,TAXIS,COMMON,CONTRACT)
Towed? YES / To By: FROEDGES	Due to Disabling Damage: YES / Emergency Run? / Fire?: NO
1a Lic State: GA / Lic Year: 2010 / Registered Owner's Name (Last, First, MI): GROUP, ACUITY LIGHTING / [ ] Same as Driver	
License#: LE68831 / Address (Street, City, State, Zip): 1400 LESTER ROAD	Vehicle Type: TRACTOR/ONE SEMI TRAILER
Veh Year: 1998 / Make: GREAT DANE / CONYERS / GA / 30012	Pre-Crash Vehicle Action: GOING STRAIGHT
Lic State / Lic Year / Registered Owner's Name (Last, First, MI) / [ ] Same as Driver	Direction of Travel: SOUTH
License# / Address (Street, City, State, Zip)	Type of Primary/Secondary Roadway: One Way Traffic: [ ] One Lane; [ ] Two Lanes; [ ] Multi-Lanes (3 or more). Two Way Traffic: [ ] Two Lanes; [ ] Multi-Lane Divided (3 or more); [x] Multi-Lane Undivided 2 way left turn; [ ] Multi-Lane Undivided (3 or more); [ ] Private Drive; [ ] Alley
Veh Year / Make	
1 Commercial Vehicle: Carrier's Name and Address: ACUITY LIGHTING GROUP	
1400 LESTER ROAD	
CONYERS GA 30012	
HAZMAT Proper Shipping Name: / State DOT#	Event Collision With: 1. JACKKNIFE 2. BRIDGE RAIL
US DOT#: 974098 / ICC# / CMV Inspection: NO / If Yes	
Gross Vehicle Weight Rating: 26,001# OR MORE / Cargo Body Type: VAN/ENCLOSED BOX	
HAZMAT Placard: NO / HAZMAT Release of Cargo: NO / HAZMAT 4-Digit ID# / Hazzard Class #	

NON-DRIVER INJURED INFORMATION

Local ID: 1420100120200453

901272115

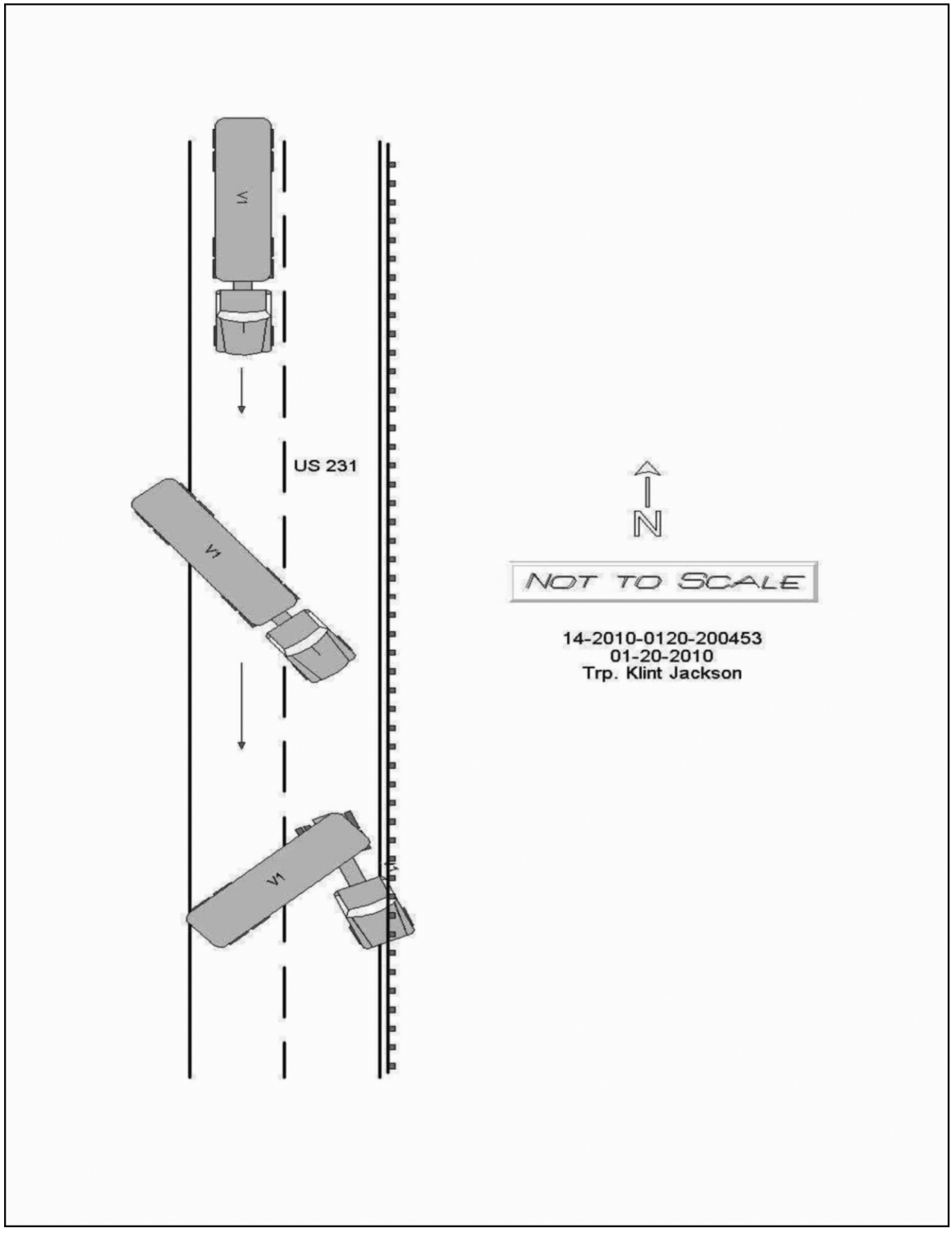
Page 4 of 4

Injured Pre-crash Location: Veh# 1 INJURED	Safety Equipment Used: NO RESTRAINT
Name (Last, First, MI): KENT, LARRY W	Safety Equipment Effective?
Address (Street, City, State, Zip): 20 NORTHWOOD OAK CT	Ejection/Trapped: NOT EJECTED OR TRAPPED
OXFORD GA 30054	EMS No.: 0687 · Immed Attn: NO · Driver Injury Status: NON-INCAPACITATING
Date of Birth: 10/09/1955 · Age: 54 · Gender: MALE	Nature of Most Severe Injury: COMPLAINT OF PAIN
Position in or on Vehicle: Front / Rear (seat grid, one box checked)	Location of Most Severe Injury: NECK
	Test Given · Type Given: ☐ Blood ☐ Urine ☐ Breath ☐ SFST ☐ PBT
	Alcohol Results: PBT · Certified Test · ☐ Pending · Drug Results

Injured Pre-crash Location: Veh#	Safety Equipment Used
Name (Last, First, MI)	Safety Equipment Effective?
Address (Street, City, State, Zip)	Ejection/Trapped
	EMS No. · Immed Attn · Driver Injury Status
Date of Birth · Age · Gender	Nature of Most Severe Injury
Position in or on Vehicle: Front / Rear	Location of Most Severe Injury
	Test Given · Type Given: ☐ Blood ☐ Urine ☐ Breath ☐ SFST ☐ PBT
	Alcohol Results: PBT · Certified Test · ☐ Pending · Drug Results

Injured Pre-crash Location: Veh#	Safety Equipment Used
Name (Last, First, MI)	Safety Equipment Effective?
Address (Street, City, State, Zip)	Ejection/Trapped
	EMS No. · Immed Attn · Driver Injury Status
Date of Birth · Age · Gender	Nature of Most Severe Injury
Position in or on Vehicle: Front / Rear	Location of Most Severe Injury
	Test Given · Type Given: ☐ Blood ☐ Urine ☐ Breath ☐ SFST ☐ PBT
	Alcohol Results: PBT · Certified Test · ☐ Pending · Drug Results

Injured Pre-crash Location: Veh#	Safety Equipment Used
Name (Last, First, MI)	Safety Equipment Effective?
Address (Street, City, State, Zip)	Ejection/Trapped
	EMS No. · Immed Attn · Driver Injury Status
Date of Birth · Age · Gender	Nature of Most Severe Injury
Position in or on Vehicle: Front / Rear	Location of Most Severe Injury
	Test Given · Type Given: ☐ Blood ☐ Urine ☐ Breath ☐ SFST ☐ PBT
	Alcohol Results: PBT · Certified Test · ☐ Pending · Drug Results


V1
US 231
V1
V1
N
NOT TO SCALE
14-2010-0120-200453
01-20-2010
Trp. Klint Jackson

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

I. Preliminary Field Investigation: (a) Observation Date: _____ (b) Observed By: _____
(c) County: White (d) Sub-district: Fowler
(c) Location Description (MM ###.# or Cross Streets & Direction): I65 193.4 SB
(d) Description of Damage (Circle One or More): Guardrail Crash Attenuator Cable-Median Barrier Sign
Rutting Tension Anchor MSE Wall Traffic Sign Pole ITS Equipment Fence Other

II. Detailed Field Investigation: (a) Investigation Date: 2/16/2010 (b) Investigated By: Grant Farnsworth
(c) Detailed Location Description: I65 193.4 SB (d) Lat/Longitude: 40.66852, -87.04218
(e) Detailed Damage Description: Guardrail hit on west side twice and east side of SB lane, Volvo bumper found
(f) Work Order Repair Estimated Pay Items (Quantities ONLY):

ITEM	QUANTITY
Guardrail posts	10
Guardrail Steel Beam (LF)	100
Guardrail Brackets	10
INDOT Estimate/Inspection	?
Other contractor costs (e.g. traffic control, mobilization)	?

(g) Archived Crash Pictures Network Directory: C:\Fowler\DetailedFieldInvestigation\2010_02_06\
I65_193.4_SB_Guardrail

III. Office Investigation: (a) Crash ID: 901273493 (b) Crash Date: 02/06/2010
(c) Crash Record is Attached: YES / NO (d) Date Notification Letters Sent to Driver(s) & Insurer(s): _____
(e) Number of Drivers & Insurers Notifications Letters Sent To: ___
(f) Archived Repair Pictures Network Directory: C:\Fowler\OfficeInvestigation\901273493\RepairedPhotos
(g) New Archived Crash Picture Location: C:\Fowler\OfficeInvestigation\901273493\DamagedPhotos\I_65_193.4_SB_Guardrail

IV. Work Order Repair Estimate: (a) Estimation Date: 03/02/2010
(b) Estimated By: G. Farnsworth/V. VanAllen (c) Final Pay Items: (See Back)

V. Approval to Proceed with Repair: (a) Responsi.ble Manager: _____
(b) Approval Date: _____ (c) Work Order #: _____

VI. Documentation of Repair: (a) Repair Date(s): before 5/20/2010 (b) Repaired by: INDOT / Contractor
(c) Photo of Repair Completed: Y / N (d) Inspected by (Optional): _____
(e) Detailed Schedule of Actual Pay Items and Costs (See Back)

VII. Accounting Tracking: (a) Invoice Date: ??? (b) Invoice Amount: $1,580
(c) Paid Date: _____ (d) Paid Amount: _____
(e) Close out Summary Details and Narrative: _____

Form M-54

Figure A.5: I65 193.4 SB invoice

WORK SHEET – DAMAGE TO STATE PROPERTY

INDIANA DEPARTMENT OF TRANSPORTATION

Report to CLAIMS AND COMPENSATION DEPARTMENT

				Work Order Repair Estimate		Actual Repair	
Description	Contract Item #	Unit	Unit Cost	Quantity	Estimate Cost	Quantity	Total Cost
GUARDRAIL Materials							
Guardrail Steel Beam Galvanized	34	LF	$8.60	100	$860	100	$860
Guardrail Post Bracket, 8.5 lb/LF, Galvanized	29	EA	$19	10	$190	8	$152
Guardrail Post, 8.5 lb/LF, 7' long, Galvanized	14	EA	$63	10	$630	8	$504
Guardrail Post Plumb	42	EA	$16	0	0	4	$64
CRASH ATTENUATOR Materials							
		EA					
CABLE-MEDIAN BARRIERS Materials							
CMB Terminal Post		EA					
CMB HairPin		EA					
CMB LockPlate		EA					
CMB Tension Adjustment		EA					
Labor (with Benefits) (For INDOT)							
Foreman		HR					
Super		HR					
Laborer		HR					
Flagman		HR					
Equipment (For INDOT)							
Dump Truck		HR					
Attenuator Truck		HR					
Sign Board		HR					
Pick-up Truck		HR					
Maintenance of Traffic (For INDOT)							
Shoulder		HR					
Median		HR					
Single Lane Closure		HR					
On Bridge		HR					
FLAT FEES							
Mobilization		EA					
Crash Documentation (Pre or Post)		EA					
Clean Up (Just Repair/Replacement Materials....not vehicular damage)		EA					
Obtaining Crash Report		EA					
OTHER							
		COST ESTIMATE			**$1,680**		
		ACTUAL COST					**$1,580**

Form M-54

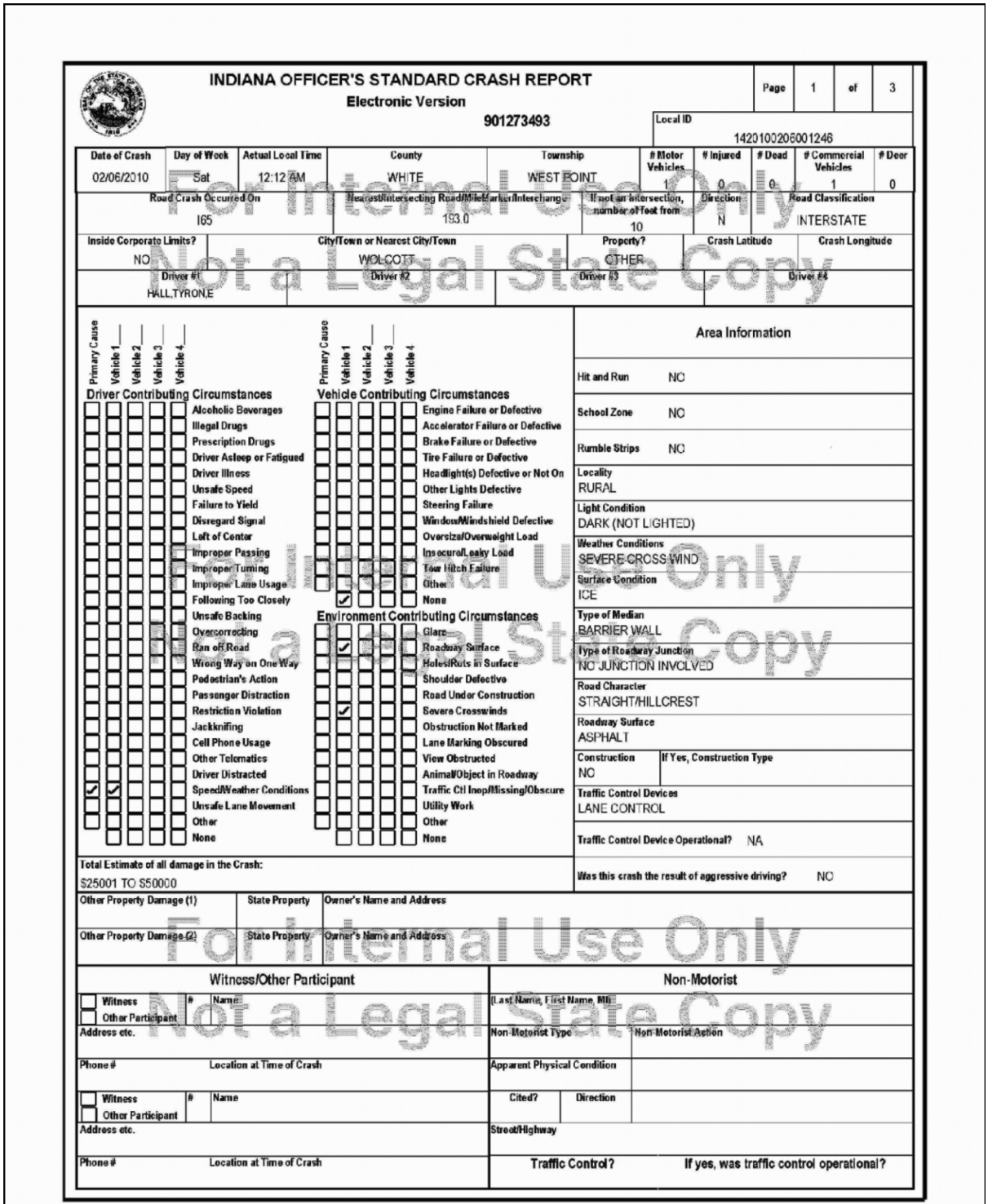
CRASH PHOTOS

Figure 1: I65 SB; West Side; MM: ~193.4; Damage to Guardrail; Photo Facing South

Figure 2: I65 SB; East Side; MM: ~193.4; Damage to Guardrail (Another Crash Hit Attenuator); Photo Facing East

Figure 3: I65 SB; West Side; MM: ~193.4; Repair of 2nd Guardrail Hit; Photo Facing West

Figure 4: I65 SB; East Side; MM: ~193.4; Repair of 1st Guardrail Hit; Photo Facing Southeast



INDIANA OFFICER'S STANDARD CRASH REPORT

Electronic Version

901273493

Page 1 of 3

Local ID: 1420100206001246

Date of Crash	Day of Week	Actual Local Time	County	Township	# Motor Vehicles	# Injured	# Dead	# Commercial Vehicles	# Deer
02/06/2010	Sat	12:12 AM	WHITE	WEST POINT	1	0	0	1	0

Road Crash Occurred On	Nearest/Intersecting Road/Mile Marker/Interchange	If not an intersection, number of Feet from	Direction	Road Classification
I65	193.0	10	N	INTERSTATE

Inside Corporate Limits?	City/Town or Nearest City/Town	Property?	Crash Latitude	Crash Longitude
NO	WOLCOTT	OTHER		

Driver #1	Driver #2	Driver #3	Driver #4
HALL,TYRONE			

Driver Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Alcoholic Beverages					
Illegal Drugs					
Prescription Drugs					
Driver Asleep or Fatigued					
Driver Illness					
Unsafe Speed					
Failure to Yield					
Disregard Signal					
Left of Center					
Improper Passing					
Improper Turning					
Improper Lane Usage					
Following Too Closely					
Unsafe Backing					
Overcorrecting					
Ran off Road					
Wrong Way on One Way					
Pedestrian's Action					
Passenger Distraction					
Restriction Violation					
Jackknifing					
Cell Phone Usage					
Other Telematics					
Driver Distracted					
Speed/Weather Conditions	☑	☑			
Unsafe Lane Movement					
Other					
None					

Vehicle Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Engine Failure or Defective					
Accelerator Failure or Defective					
Brake Failure or Defective					
Tire Failure or Defective					
Headlight(s) Defective or Not On					
Other Lights Defective					
Steering Failure					
Window/Windshield Defective					
Oversize/Overweight Load					
Insecure/Leaky Load					
Tow Hitch Failure					
Other					
None	☑				

Environment Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Glare					
Roadway Surface		☑			
Holes/Ruts in Surface					
Shoulder Defective					
Road Under Construction					
Severe Crosswinds		☑			
Obstruction Not Marked					
Lane Marking Obscured					
View Obstructed					
Animal/Object in Roadway					
Traffic Ctl Inop/Missing/Obscure					
Utility Work					
Other					
None					

Area Information

Hit and Run	NO
School Zone	NO
Rumble Strips	NO
Locality	RURAL
Light Condition	DARK (NOT LIGHTED)
Weather Conditions	SEVERE CROSSWIND
Surface Condition	ICE
Type of Median	BARRIER WALL
Type of Roadway Junction	NO JUNCTION INVOLVED
Road Character	STRAIGHT/HILLCREST
Roadway Surface	ASPHALT
Construction	NO
If Yes, Construction Type	
Traffic Control Devices	LANE CONTROL
Traffic Control Device Operational?	NA
Was this crash the result of aggressive driving?	NO

Total Estimate of all damage in the Crash: $25001 TO $50000

Other Property Damage (1)	State Property	Owner's Name and Address
Other Property Damage (2)	State Property	Owner's Name and Address

Witness/Other Participant

☐ Witness ☐ Other Participant | # | Name:

Address etc.

Phone # | Location at Time of Crash

☐ Witness ☐ Other Participant | # | Name

Address etc.

Phone # | Location at Time of Crash

Non-Motorist

(Last Name, First Name, MI)

Non-Motorist Type | Non-Motorist Action

Apparent Physical Condition

Cited? | Direction

Street/Highway

Traffic Control? | If yes, was traffic control operational?

901273493

Page 2 of 3

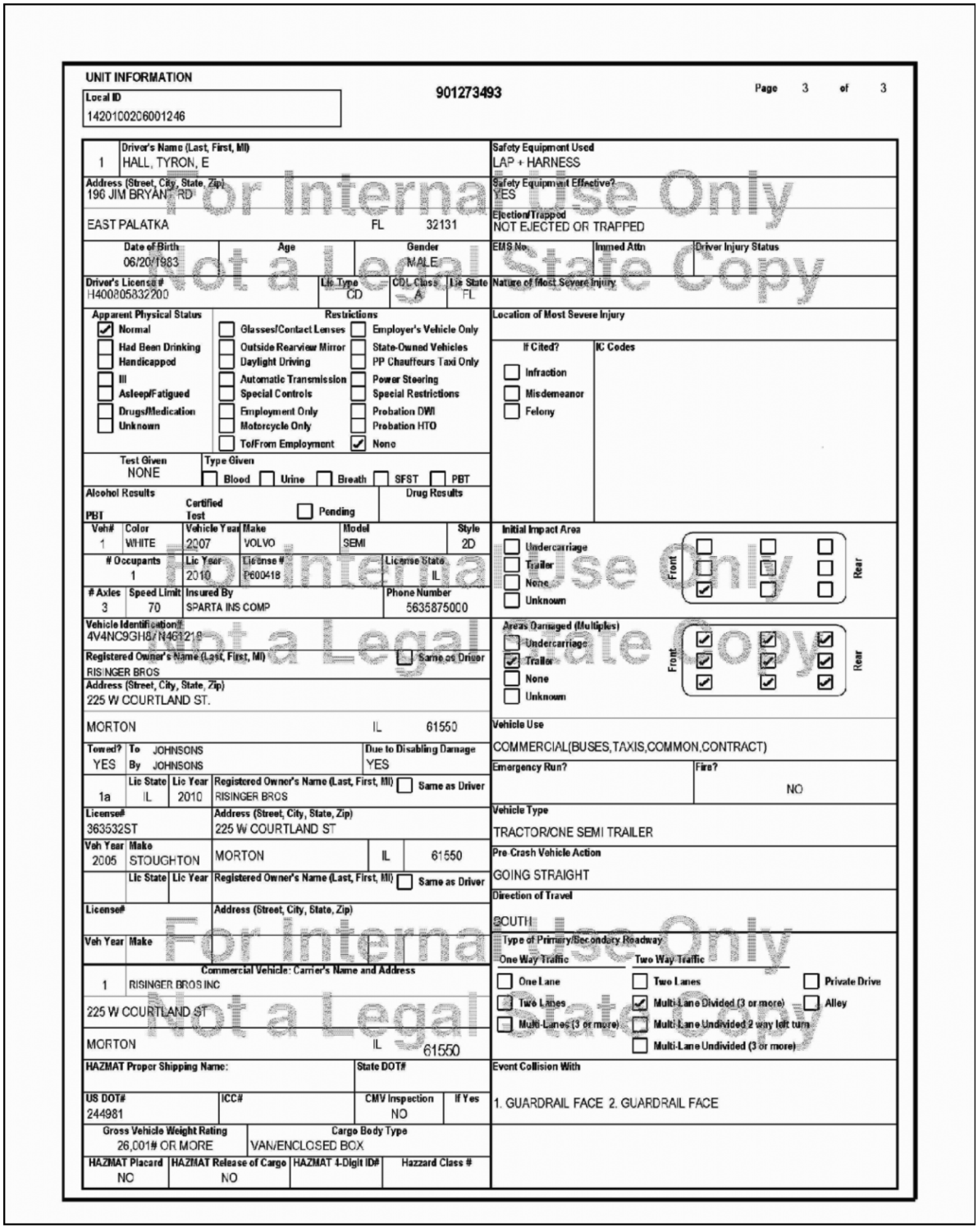
Local ID
1420100206001246

Type of Crash		
HEAD ON		
Time Notified: 12:12 AM	Time Arrived: 12:18 AM	Other Location of Investigation: AT SCENE ONLY

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO
Assisting Officer	**ID No.**	**Agency**	**Date of Report**	
			02/06/2010	
Investigating Officer	**ID No.**	**Agency**	**Reviewing Officer**	
STINSON, T	8202	ISP LAFAYETTE 14	A HAMPTON	

Narrative

On 2-6-2010 at approximately 12:12 a.m. Vehicle 1 was SB on I-65 near 193 MM. Vehicle 1 was traveling in the right driving lane when a severe cross-wind struck his vehicle. Driver 1 stated that the wind lifted one side of his trailer and truck. He stated that he then turned to keep the truck from tipping onto its side when it came back down. When the truck landed back on all its tires it turned into the east guard rail. Then V-1 crossed both lanes and struck the west guard rail. The semi then jack knifed and landed on top of the west guard rail.



UNIT INFORMATION

Local ID: 1420100206001246

901273493

Page 3 of 3

Driver's Name (Last, First, MI)	1 HALL, TYRON, E
Address (Street, City, State, Zip)	196 JIM BRYAN RD EAST PALATKA FL 32131
Date of Birth	06/20/1983
Age	
Gender	MALE
Driver's License #	H400805832200
Lic Type	CD
CDL Class	A
Lic State	FL
Apparent Physical Status	[x] Normal; [ ] Had Been Drinking; [ ] Handicapped; [ ] Ill; [ ] Asleep/Fatigued; [ ] Drugs/Medication; [ ] Unknown
Restrictions	[ ] Glasses/Contact Lenses; [ ] Outside Rearview Mirror; [ ] Daylight Driving; [ ] Automatic Transmission; [ ] Special Controls; [ ] Employment Only; [ ] Motorcycle Only; [ ] To/From Employment; [ ] Employer's Vehicle Only; [ ] State-Owned Vehicles; [ ] PP Chauffeurs Taxi Only; [ ] Power Steering; [ ] Special Restrictions; [ ] Probation DWI; [ ] Probation HTO; [x] None
Test Given	NONE
Type Given	[ ] Blood [ ] Urine [ ] Breath [ ] SFST [ ] PBT
Alcohol Results PBT	
Certified Test	[ ] Pending
Drug Results	

Veh#	Color	Vehicle Year	Make	Model	Style
1	WHITE	2007	VOLVO	SEMI	2D

# Occupants	Lic Year	License #	License State
1	2010	P600418	IL

# Axles	Speed Limit	Insured By	Phone Number
3	70	SPARTA INS COMP	5635875000

Vehicle Identification #: 4V4NC9GH8YN461219

Registered Owner's Name (Last, First, MI): RISINGER BROS [ ] Same as Driver

Address (Street, City, State, Zip): 225 W COURTLAND ST. MORTON IL 61550

Towed?	To	Due to Disabling Damage
YES	By JOHNSONS	YES

	Lic State	Lic Year	Registered Owner's Name (Last, First, MI)	
1a	IL	2010	RISINGER BROS	[ ] Same as Driver

License #: 363532ST

Address (Street, City, State, Zip): 225 W COURTLAND ST

Veh Year	Make			
2005	STOUGHTON	MORTON	IL	61550

	Lic State	Lic Year	Registered Owner's Name (Last, First, MI)	
				[ ] Same as Driver

License #:

Address (Street, City, State, Zip):

Veh Year | Make

Commercial Vehicle: Carrier's Name and Address

1 RISINGER BROS INC

225 W COURTLAND ST

MORTON IL 61550

HAZMAT Proper Shipping Name:	State DOT#

US DOT#	ICC#	CMV Inspection	If Yes
244981		NO	

Gross Vehicle Weight Rating	Cargo Body Type
26,001# OR MORE	VAN/ENCLOSED BOX

HAZMAT Placard	HAZMAT Release of Cargo	HAZMAT 4-Digit ID#	Hazzard Class #
NO	NO		

Safety Equipment Used: LAP + HARNESS

Safety Equipment Effective? YES

Ejection/Trapped: NOT EJECTED OR TRAPPED

EMS No.	Immed Attn	Driver Injury Status

Nature of Most Severe Injury:

Location of Most Severe Injury:

If Cited? [ ] Infraction [ ] Misdemeanor [ ] Felony

IC Codes:

Initial Impact Area: [ ] Undercarriage [ ] Trailer [ ] None [ ] Unknown

Areas Damaged (Multiples): [ ] Undercarriage [x] Trailer [ ] None [ ] Unknown

Vehicle Use: COMMERCIAL(BUSES,TAXIS,COMMON,CONTRACT)

Emergency Run?	Fire?
	NO

Vehicle Type: TRACTOR/ONE SEMI TRAILER

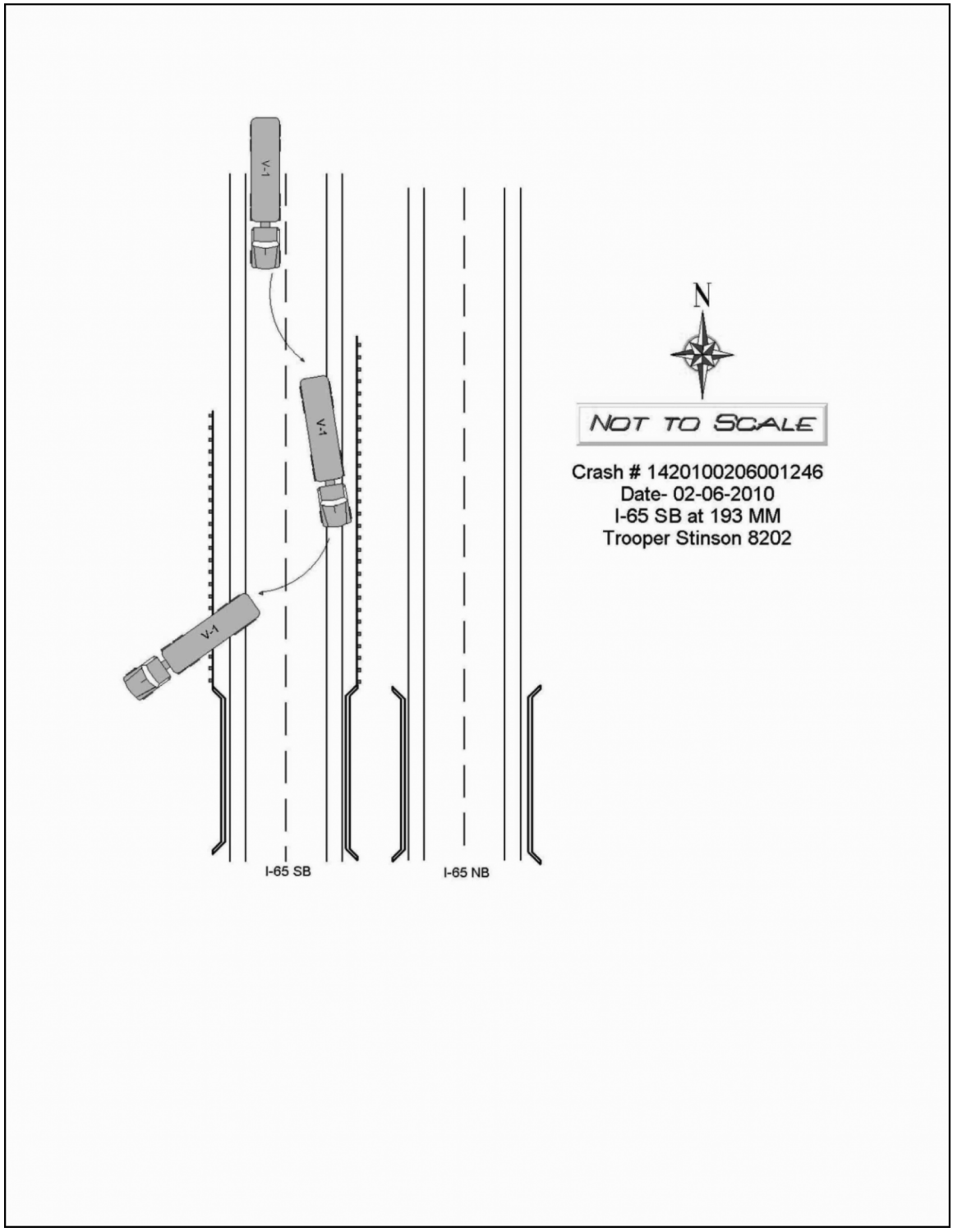
Pre-Crash Vehicle Action: GOING STRAIGHT

Direction of Travel: SOUTH

Type of Primary/Secondary Roadway

One Way Traffic	Two Way Traffic	
[ ] One Lane	[ ] Two Lanes	[ ] Private Drive
[ ] Two Lanes	[x] Multi-Lane Divided (3 or more)	[ ] Alley
[ ] Multi-Lanes (3 or more)	[ ] Multi-Lane Undivided 2 way left turn	
	[ ] Multi-Lane Undivided (3 or more)	

Event Collision With: 1. GUARDRAIL FACE 2. GUARDRAIL FACE


V-1
V-1
V-1
I-65 SB
I-65 NB
N
NOT TO SCALE
Crash # 1420100206001246
Date- 02-06-2010
I-65 SB at 193 MM
Trooper Stinson 8202

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

I. Preliminary Field Investigation: (a) Observation Date: 4/12/2010 (b) Observed By: Tony Johnson
(c) County: White (d) Sub-district: Fowler
(c) Location Description (MM ###.# or Cross Streets & Direction): I65 197.4 SB Median by Bridge Pillars
(d) Description of Damage (Circle One or More): Guardrail Crash Attenuator (Cable-Median Barrier) Sign
Rutting Tension Anchor MSE Wall Traffic Sign Pole ITS Equipment Fence (Other)

II. Detailed Field Investigation: (a) Investigation Date: 4/12/2010 (b) Investigated By: Grant Farnsworth
(c) Detailed Location Description: I65 197.4 SB (d) Lat/Longitude: 40.71769, -87.07892
(e) Detailed Damage Description: I65 197.4 SB Median by Bridge Pillars
(f) Work Order Repair Estimated Pay Items (Quantities ONLY):

ITEM	QUANTITY
Cable Median Barrier Posts, Brackets, HairPins	7
Crash Barrels	9
Pea Gravel (tons)	3
INDOT Estimate/Inspection	?
Other contractor costs (e.g. traffic control, mobilization)	?

(g) Archived Crash Pictures Network Directory: C:\Fowler\DetailedFieldInvestigation\2010_04_12\I65_197.4_SB_BAR

III. Office Investigation: (a) Crash ID: 901326220 (b) Crash Date: 04/10/2010
(c) Crash Record is Attached: (YES) / NO (d) Date Notification Letters Sent to Driver(s) & Insurer(s): _____
(e) Number of Drivers & Insurers Notifications Letters Sent To: ___
(f) Archived Repair Pictures Network Directory: C:\Fowler\OfficeInvestigation\901326220\RepairedPhotos
(g) New Archived Crash Picture Location: C:\Fowler\OfficeInvestigation\901326220\DamagedPhotos\I_65_197.4_SB_Guardrail

IV. Work Order Repair Estimate: (a) Estimation Date: 05/20/2010
(b) Estimated By: G. Farnsworth/K. Robertson (c) Final Pay Items: (See Back)

V. Approval to Proceed with Repair: (a) Responsi.ble Manager: _____
(b) Approval Date: _____ (c) Work Order #: _____

VI. Documentation of Repair: (a) Repair Date(s): _____ (b) Repaired by: INDOT / Contractor
(c) Photo of Repair Completed: Y / N (d) Inspected by (Optional): _____
(e) Detailed Schedule of Actual Pay Items and Costs (See Back)

VII. Accounting Tracking: (a) Invoice Date: _____ (b) Invoice Amount: $2,852.05
(c) Paid Date: _____ (d) Paid Amount: _____
(e) Close out Summary Details and Narrative: _____

Form M-54

Figure A.6: I65 197.4 SB invoice

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

				Work Order Repair Estimate		Actual Repair	
Description	Contract Item #	Unit	Unit Cost	Quantity	Estimate Cost	Quantity	Total Cost
GUARDRAIL Materials							
Guardrail Steel Beam Galvanized		LF					
Guardrail Post Bracket, 8.5 lb/LF, Galvanized		EA					
Guardrail Post, 8.5 lb/LF, 7' long, Galvanized		EA					
Guardrail Post Plumb		EA					
CRASH ATTENUATOR Materials							
700# Barrel		EA	$168.48			6	$1,010.88
17# Barrel		EA	$161.01			2	$322.02
21# Barrel		EA	$161.01			1	$161.01
CABLE-MEDIAN BARRIERS Materials							
CMB Terminal Post		EA	$42.90			4	$171.60
CMB HairPin		EA	$12.96			5	$64.80
CMB LockPlate		EA	$28.90			7	$202.30
CMB Tension Adjustment		EA					
Labor (with Benefits) (For INDOT)							
Foreman		HR	$27.25			6	$163.50
Super		HR					
Laborer		HR	$20.99			18	$377.82
Flagman		HR					
Equipment (For INDOT)							
Dump Truck		HR	$29			6	$174
Attenuator Truck Attachment		HR	$3.36			6	$20.16
Sign Board		HR	$6			6	$36
Pick-up Truck		HR	$8.08			6	$48.48
Crew cab stakebed		HR	$16.58			6	$99.48
Maintenance of Traffic (For INDOT)							
Shoulder		HR					
Median		HR					
Single Lane Closure		HR					
On Bridge		HR					
FLAT FEES							
Mobilization		EA					
Crash Documentation (Pre or Post)		EA					
Clean Up (Just Repair/Replacement Materials....not vehicular damage)		EA					
Obtaining Crash Report		EA					
OTHER							
		COST ESTIMATE					
		ACTUAL COST					**$2,852.05**

Form M-54

CRASH PHOTOS

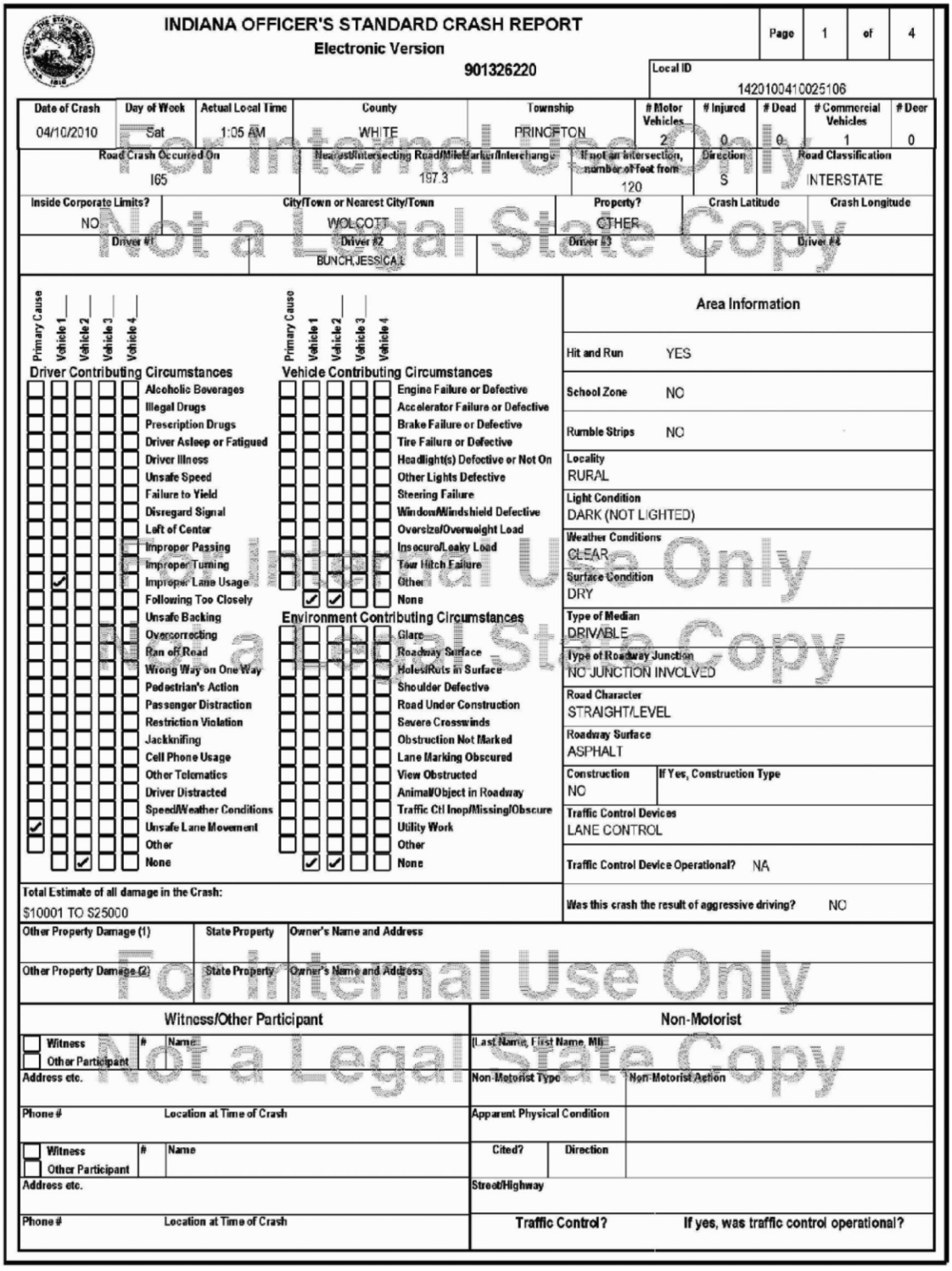
Figure 1: I65 SB; East side; MM: ~197.4; Damaged Crash Barrels; Photo Facing East

Figure 2: I65 SB; East side; MM: ~197.4; Damaged Cable-Median Barrier; Photo Facing South

REPAIR PHOTOS

Figure 3: I65 SB; East side; MM: ~197.4; Repaired Cable-Median Barrier; Photo Facing South

Figure 4: I65 SB; East side; MM: ~197.4; Repaired Crash Barrels; Photo Facing North



INDIANA OFFICER'S STANDARD CRASH REPORT

Electronic Version

901326220

Page 1 of 4

Local ID: 142010041002510 6

Date of Crash	Day of Week	Actual Local Time	County	Township	# Motor Vehicles	# Injured	# Dead	# Commercial Vehicles	# Deer
04/10/2010	Sat	1:05 AM	WHITE	PRINCETON	2	0	0	1	0

Road Crash Occurred On	Nearest/Intersecting Road/Mile Marker/Interchange	If not an intersection, number of feet from	Direction	Road Classification
I65	197.3	120	S	INTERSTATE

Inside Corporate Limits?	City/Town or Nearest City/Town	Property?	Crash Latitude	Crash Longitude
NO	WOLCOTT	OTHER		

Driver #1	Driver #2	Driver #3	Driver #4
	BUNCH,JESSICA L		

Driver Contributing Circumstances

Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4	
					Alcoholic Beverages
					Illegal Drugs
					Prescription Drugs
					Driver Asleep or Fatigued
					Driver Illness
					Unsafe Speed
					Failure to Yield
					Disregard Signal
					Left of Center
					Improper Passing
					Improper Turning
	☑				Improper Lane Usage
					Following Too Closely
					Unsafe Backing
					Overcorrecting
					Ran off Road
					Wrong Way on One Way
					Pedestrian's Action
					Passenger Distraction
					Restriction Violation
					Jackknifing
					Cell Phone Usage
					Other Telematics
					Driver Distracted
					Speed/Weather Conditions
☑					Unsafe Lane Movement
					Other
	☑				None

Vehicle Contributing Circumstances

Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4	
					Engine Failure or Defective
					Accelerator Failure or Defective
					Brake Failure or Defective
					Tire Failure or Defective
					Headlight(s) Defective or Not On
					Other Lights Defective
					Steering Failure
					Window/Windshield Defective
					Oversize/Overweight Load
					Insecure/Leaky Load
					Tow Hitch Failure
					Other
	☑	☑			None

Environment Contributing Circumstances

					Glare
					Roadway Surface
					Holes/Ruts in Surface
					Shoulder Defective
					Road Under Construction
					Severe Crosswinds
					Obstruction Not Marked
					Lane Marking Obscured
					View Obstructed
					Animal/Object in Roadway
					Traffic Ctl Inop/Missing/Obscure
					Utility Work
					Other
	☑	☑			None

Area Information

Hit and Run	YES
School Zone	NO
Rumble Strips	NO
Locality	RURAL
Light Condition	DARK (NOT LIGHTED)
Weather Conditions	CLEAR
Surface Condition	DRY
Type of Median	DRIVABLE
Type of Roadway Junction	NO JUNCTION INVOLVED
Road Character	STRAIGHT/LEVEL
Roadway Surface	ASPHALT
Construction	NO
If Yes, Construction Type	
Traffic Control Devices	LANE CONTROL
Traffic Control Device Operational?	NA
Was this crash the result of aggressive driving?	NO

Total Estimate of all damage in the Crash: $10001 TO $25000

Other Property Damage (1)	State Property	Owner's Name and Address
Other Property Damage (2)	State Property	Owner's Name and Address

Witness/Other Participant

☐ Witness ☐ Other Participant | # | Name:

Address etc.

Phone # | Location at Time of Crash

☐ Witness ☐ Other Participant | # | Name

Address etc.

Phone # | Location at Time of Crash

Non-Motorist

(Last Name, First Name, MI)

Non-Motorist Type | Non-Motorist Action

Apparent Physical Condition

Cited? | Direction

Street/Highway

Traffic Control? | If yes, was traffic control operational?

901326220

Local ID
1420100410025106

Type of Crash SAME DIRECTION SIDESWIPE

Time Notified	Time Arrived	Other Location of Investigation
1:08 AM	1:30 AM	AT SCENE ONLY

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO
Assisting Officer	**ID No.**	**Agency**	**Date of Report**	
			04/10/2010	
Investigating Officer	**ID No.**	**Agency**	**Reviewing Officer**	
WITHERINGTON, C	7723	ISP LOWELL 13	TC	

Narrative

Driver 2 stated she was southbound near the 197 mile marker traveling in the right lane. Driver 2 advised that she was following behind a semi tractor and trailer and she was traveling at 76 miles per hour in a posted 70 zone. Driver 1 stated that as she approached the slower moving semi tractor she moved into the left lane to pass. Driver 2 advised that as she began to pass the semi tractor/ Vehicle 1 it began to move into her lane. Driver 2 stated that vehicle 2 and vehicle 1 made contact at some point. There was evidence of tire transfer from the semi tire near the front passenger side of vehicle 2. Driver 2 stated that the contact made her slide out of control and into the median. As Vehicle 2 entered the median it struck the center strand barrier cables. The vehicle continued thru the cables and struck the barrel barriers and bridge/overpass near the 197 mile marker. Driver 2 stated that Vehicle 1 continued southbound from the area of the crash without stopping.

UNIT INFORMATION

Local ID: 1420100410025106

901326220

Page 4 of 4

2	Driver's Name (Last, First, MI): BUNCH, JESSICA, L
Address (Street, City, State, Zip): 3664 MIDDLEFIELD DR APT C	
INDIANAPOLIS IN 47421	
Date of Birth: 08/31/1991	Age: 19
Gender: FEMALE	
Driver's License #: 013090229 1	Lic Type: DP
CDL Class:	Lic State: IN

Apparent Physical Status: [x] Normal; [ ] Had Been Drinking; [ ] Handicapped; [ ] Ill; [ ] Asleep/Fatigued; [ ] Drugs/Medication; [ ] Unknown

Restrictions: [ ] Glasses/Contact Lenses; [ ] Outside Rearview Mirror; [ ] Daylight Driving; [ ] Automatic Transmission; [ ] Special Controls; [ ] Employment Only; [ ] Motorcycle Only; [ ] To/From Employment; [ ] Employer's Vehicle Only; [ ] State-Owned Vehicles; [ ] PP Chauffeurs Taxi Only; [ ] Power Steering; [ ] Special Restrictions; [ ] Probation DWI; [ ] Probation HTO; [x] None

Test Given: NONE	Type Given: [ ] Blood [ ] Urine [ ] Breath [ ] SFST [ ] PBT
Alcohol Results PBT:	Certified Test: [ ] Pending
Drug Results:	

Veh#	Color	Vehicle Year	Make	Model	Style
2	YELLOW	2000	Toyota	CELICA	2D

# Occupants	Lic Year	License #	License State
2	2011	113ZYT	IN

# Axles	Speed Limit	Insured By	Phone Number
2	70	PROGRESSIVE	0000000000

Vehicle Identification #: JTDD438T6Y0030545

Registered Owner's Name (Last, First, MI): BUNCH, JESSICA, L [ ] Same as Driver

Address (Street, City, State, Zip): 3664 MIDDLEFIELD DR APT C

INDIANAPOLIS IN 47421

Towed?	To	Due to Disabling Damage
YES	By FARNEYS	YES

Lic State	Lic Year	Registered Owner's Name (Last, First, MI)	Same as Driver
			[ ]

License #: Address (Street, City, State, Zip):

Veh Year: Make:

Lic State	Lic Year	Registered Owner's Name (Last, First, MI)	Same as Driver
			[ ]

License #: Address (Street, City, State, Zip):

Veh Year: Make:

Commercial Vehicle: Carrier's Name and Address

HAZMAT Proper Shipping Name: State DOT#:

US DOT#: ICC#: CMV Inspection: If Yes:

Gross Vehicle Weight Rating: Cargo Body Type:

HAZMAT Placard: HAZMAT Release of Cargo: HAZMAT 4-Digit ID#: Hazzard Class #:

Safety Equipment Used: LAP + HARNESS

Safety Equipment Effective?: YES

Ejection/Trapped: NOT EJECTED OR TRAPPED

EMS No.: Immed Attn: Driver Injury Status:

Nature of Most Severe Injury:

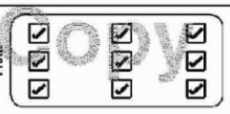
Location of Most Severe Injury:

If Cited?: [ ] Infraction [ ] Misdemeanor [ ] Felony

IC Codes:

Initial Impact Area: [ ] Undercarriage [ ] Trailer [ ] None [ ] Unknown

Areas Damaged (Multiples): [x] Undercarriage [ ] Trailer [ ] None [ ] Unknown



Vehicle Use: PERSONAL (FARM, COMPANY)

Emergency Run?: Fire?: NO

Vehicle Type: PASSENGER CAR/STATION WAGON

Pre-Crash Vehicle Action: GOING STRAIGHT

Direction of Travel: NORTH

Type of Primary/Secondary Roadway

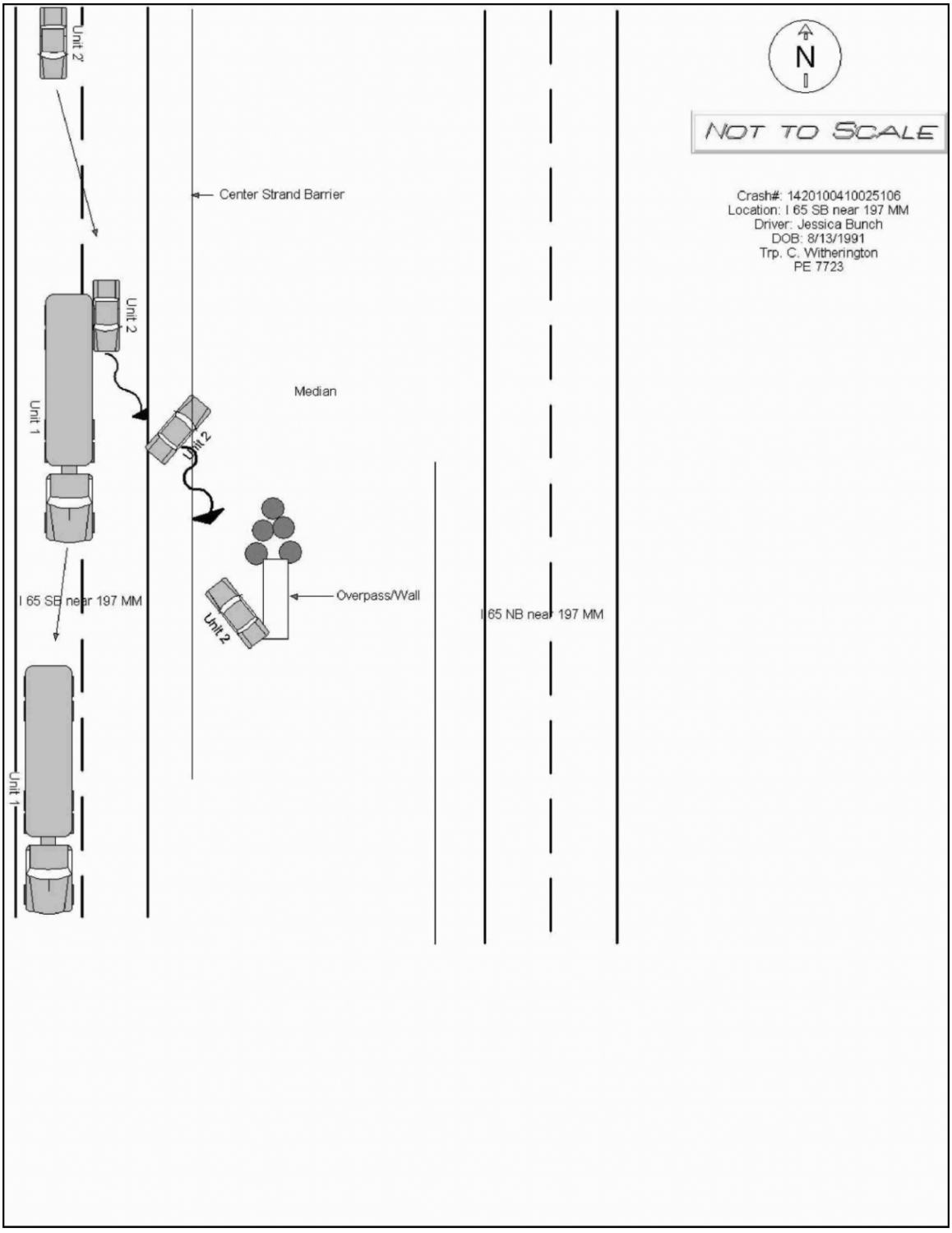
One Way Traffic: [ ] One Lane [ ] Two Lanes [ ] Multi-Lanes (3 or more)

Two Way Traffic: [ ] Two Lanes [x] Multi-Lane Divided (3 or more) [ ] Multi-Lane Undivided 2 way left turn [ ] Multi-Lane Undivided (3 or more)

[ ] Private Drive [ ] Alley

Event Collision With: 1. ANOTHER MOTOR VEHICLE 2. MEDIAN BARRIER

3. BRIDGE OVERHEAD STRUCTURE


Unit 2
Center Strand Barrier
Unit 2
Median
Unit 1
Unit 2
I 65 SB near 197 MM
Overpass/Wall
Unit 2
I 65 NB near 197 MM
Unit 1
N
NOT TO SCALE
Crash#: 1420100410025106
Location: I 65 SB near 197 MM
Driver: Jessica Bunch
DOB: 8/13/1991
Trp. C. Witherington
PE 7723

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

I. Preliminary Field Investigation: (a) Observation Date: _____ (b) Observed By: _____
(c) County: Harrison (d) Sub-district: Falls City
(e) Location Description (MM ###.# or Cross Streets & Direction): SR135 @ Landmark Ave Wside NB
(f) Description of Damage (Circle One or More): Guardrail (Crash Attenuator) Cable-Median Barrier Sign
Rutting Tension Anchor MSE Wall Traffic Sign Pole ITS Equipment Fence Other

II. Detailed Field Investigation: (a) Investigation Date: 8/18/2010 (b) Investigated By: Grant Farnsworth
(c) Detailed Location Description: SR135 @ Landmark Ave Wside NB (d) Lat/Longitude: 38.2353, -86.1275
(e) Detailed Damage Description: Repair located based on crash report
(f) Work Order Repair Estimated Pay Items (Quantities ONLY):

ITEM	QUANTITY
Crash Attenuator	1
INDOT Estimate/Inspection	?
Other contractor costs (e.g. traffic control, mobilization)	?

(g) Archived Crash Pictures Network Directory: No Pre-Repair Pictures

III. Office Investigation: (a) Crash ID: 901311405 (b) Crash Date: 03/02/2010
(c) Crash Record is Attached: (YES) / NO (d) Date Notification Letters Sent to Driver(s) & Insurer(s): _____
(e) Number of Drivers & Insurers Notifications Letters Sent To: ___
(f) Archived Repair Pictures Network Directory: C:\Seymour\OfficeInvestigation\901311405\RepairedPhotos
(g) New Archived Crash Picture Location: _____

IV. Work Order Repair Estimate: (a) Estimation Date: 08/23/2010
(b) Estimated By: G. Farnsworth (c) Final Pay Items: (See Back)

V. Approval to Proceed with Repair: (a) Responsi.ble Manager: _____
(b) Approval Date: _____ (c) Work Order #: _____

VI. Documentation of Repair: (a) Repair Date(s): _____ (b) Repaired by: INDOT / Contractor
(c) Photo of Repair Completed: Y / N (d) Inspected by (Optional): _____
(e) Detailed Schedule of Actual Pay Items and Costs (See Back)

VII. Accounting Tracking: (a) Invoice Date: _____ (b) Invoice Amount: _____
(c) Paid Date: _____ (d) Paid Amount: _____
(e) Close out Summary Details and Narrative: _____

Form M-54

Figure A.7: SR 135 @ Landmark Avenue invoice

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

				Work Order Repair Estimate		Actual Repair	
Description	Contract Item #	Unit	Unit Cost	Quantity	Estimate Cost	Quantity	Total Cost
GUARDRAIL Materials							
Guardrail Steel Beam Galvanized		LF	~$8.60				
Guardrail Post Bracket, 8.5 lb/LF, Galvanized		EA	~$19				
Guardrail Post, 8.5 lb/LF, 7' long, Galvanized		EA	~$63				
Guardrail Post Plumb		EA	~$16				
CRASH ATTENUATOR Materials							
Guardrail End OS		EA	$2,700	1	$2,700		
CABLE-MEDIAN BARRIERS Materials							
CMB Terminal Post		EA					
CMB HairPin		EA					
CMB LockPlate		EA					
CMB Tension Adjustment		EA					
Labor (with Benefits) (For INDOT)							
Foreman		HR					
Super		HR					
Laborer		HR					
Flagman		HR					
Equipment (For INDOT)							
Dump Truck		HR					
Attenuator Truck		HR					
Sign Board		HR					
Pick-up Truck		HR					
Maintenance of Traffic (For INDOT)							
Shoulder		HR					
Median		HR					
Single Lane Closure		HR					
On Bridge		HR					
FLAT FEES							
Mobilization		EA					
Crash Documentation (Pre or Post)		EA					
Clean Up (Just Repair/Replacement Materials....not vehicular damage)		EA					
Obtaining Crash Report		EA					
OTHER							
	COST ESTIMATE				**~$2,700**		
	ACTUAL COST						

Form M-54

REPAIR PHOTOS

Figure 1: SR135 NB; West side; At Landmark Ave Intersection; Repaired Crash Attenuator; Photo Facing North

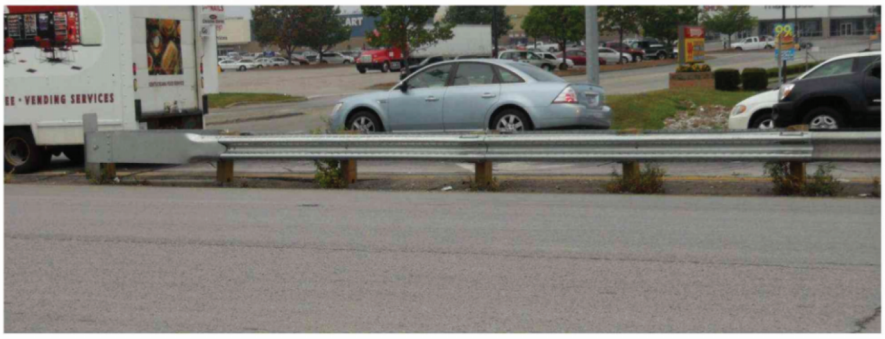
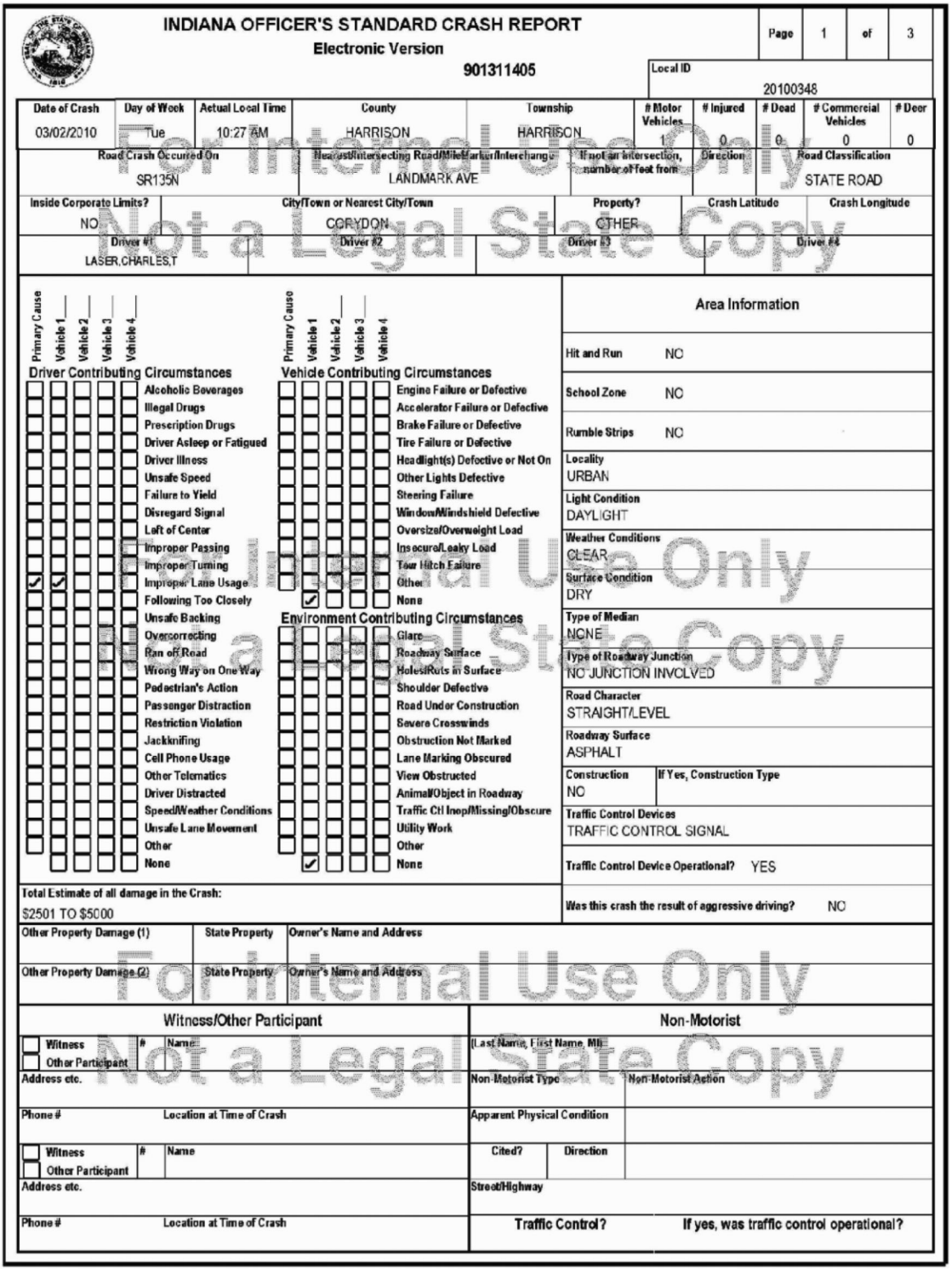


Figure 2: SR135 NB; West side; At Landmark Ave Intersection; Repaired Crash Attenuator; Photo Facing West



INDIANA OFFICER'S STANDARD CRASH REPORT

Electronic Version

Page 1 of 3

901311405

Local ID 20100348

Date of Crash	Day of Week	Actual Local Time	County	Township	# Motor Vehicles	# Injured	# Dead	# Commercial Vehicles	# Deer
03/02/2010	Tue	10:27 AM	HARRISON	HARRISON	1	0	0	0	0

Road Crash Occurred On	Nearest/Intersecting Road/MileMarker/Interchange	If not an intersection, number of feet from	Direction	Road Classification
SR135N	LANDMARK AVE			STATE ROAD

Inside Corporate Limits?	City/Town or Nearest City/Town	Property?	Crash Latitude	Crash Longitude
NO	CORYDON	OTHER		

Driver #1	Driver #2	Driver #3	Driver #4
LASER,CHARLES,T			

Driver Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Alcoholic Beverages					
Illegal Drugs					
Prescription Drugs					
Driver Asleep or Fatigued					
Driver Illness					
Unsafe Speed					
Failure to Yield					
Disregard Signal					
Left of Center					
Improper Passing					
Improper Turning					
Improper Lane Usage		☑			
Following Too Closely					
Unsafe Backing					
Overcorrecting					
Ran off Road					
Wrong Way on One Way					
Pedestrian's Action					
Passenger Distraction					
Restriction Violation					
Jackknifing					
Cell Phone Usage					
Other Telematics					
Driver Distracted					
Speed/Weather Conditions					
Unsafe Lane Movement					
Other					
None		☑			

Vehicle Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Engine Failure or Defective					
Accelerator Failure or Defective					
Brake Failure or Defective					
Tire Failure or Defective					
Headlight(s) Defective or Not On					
Other Lights Defective					
Steering Failure					
Window/Windshield Defective					
Oversize/Overweight Load					
Insecure/Leaky Load					
Tow Hitch Failure					
Other					
None		☑			

Environment Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Glare					
Roadway Surface					
Holes/Ruts in Surface					
Shoulder Defective					
Road Under Construction					
Severe Crosswinds					
Obstruction Not Marked					
Lane Marking Obscured					
View Obstructed					
Animal/Object in Roadway					
Traffic Ctl Inop/Missing/Obscure					
Utility Work					
Other					
None		☑			

Area Information

Hit and Run	NO
School Zone	NO
Rumble Strips	NO
Locality	URBAN
Light Condition	DAYLIGHT
Weather Conditions	CLEAR
Surface Condition	DRY
Type of Median	NONE
Type of Roadway Junction	NO JUNCTION INVOLVED
Road Character	STRAIGHT/LEVEL
Roadway Surface	ASPHALT
Construction	NO
If Yes, Construction Type	
Traffic Control Devices	TRAFFIC CONTROL SIGNAL
Traffic Control Device Operational?	YES
Was this crash the result of aggressive driving?	NO

Total Estimate of all damage in the Crash: $2501 TO $5000

Other Property Damage (1)	State Property	Owner's Name and Address
Other Property Damage (2)	State Property	Owner's Name and Address

Witness/Other Participant

☐ Witness ☐ Other Participant | # | Name

Address etc.

Phone # | Location at Time of Crash

☐ Witness ☐ Other Participant | # | Name

Address etc.

Phone # | Location at Time of Crash

Non-Motorist

(Last Name, First Name, MI)

Non-Motorist Type | Non-Motorist Action

Apparent Physical Condition

Cited? | Direction

Street/Highway

Traffic Control? | If yes, was traffic control operational?

901311405

Local ID
20100348

Type of Crash	HEAD ON		
Time Notified: 10:29 AM	Time Arrived: 10:32 AM	Other Location of Investigation: AT SCENE ONLY	

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO
Assisting Officer	**ID No.**	**Agency**	**Date of Report**	
			03/02/2010	
Investigating Officer	**ID No.**	**Agency**	**Reviewing Officer**	
TAYLOR, K	9218	HARRISON SD		

Narrative

Driver of V1 stated that he was traveling North on State rd 135 at Landmark ave when another vehicle almost cut him off causing him to swerve.

D1 over steered and hit a guard rail head on and ended up on top of it.

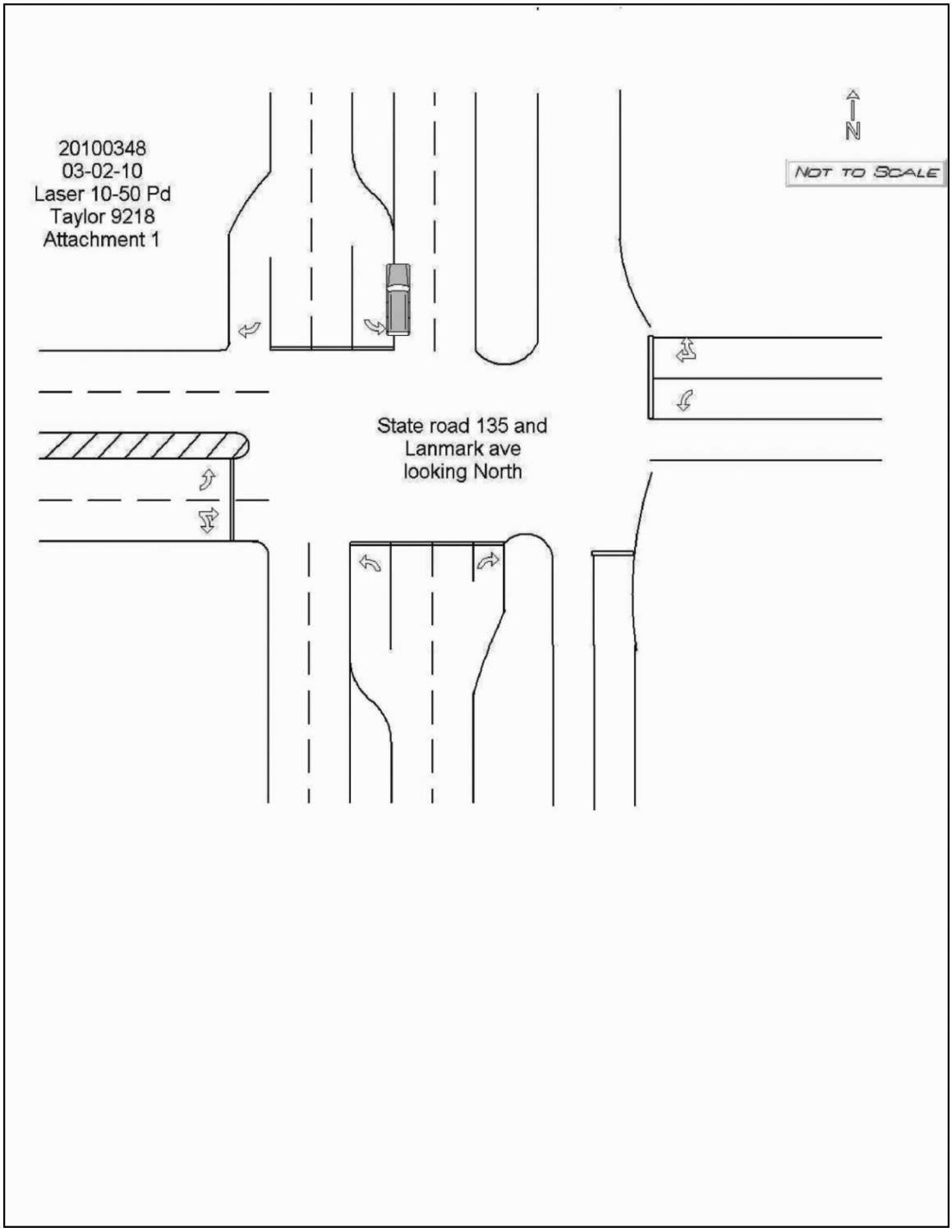
UNIT INFORMATION

Local ID: 20100348

901311405

Page 3 of 3

1 Driver's Name (Last, First, MI): LASER, CHARLES, T	Safety Equipment Used: LAP + HARNESS
Address (Street, City, State, Zip): 8906 PEKIN RD	Safety Equipment Effective?: YES
GREENVILLE IN 47121	Ejection/Trapped: NOT EJECTED OR TRAPPED
Date of Birth: 09/06/1972 | Age: 37 | Gender: MALE	EMS No. | Immed Attn | Driver Injury Status
Driver's License #: 0710554628 | Lic Type: OP | CDL Class | Lic State: IN	Nature of Most Severe Injury
Apparent Physical Status: [x] Normal; [ ] Had Been Drinking; [ ] Handicapped; [ ] Ill; [ ] Asleep/Fatigued; [ ] Drugs/Medication; [ ] Unknown	Restrictions: [x] Glasses/Contact Lenses; [ ] Outside Rearview Mirror; [ ] Daylight Driving; [ ] Automatic Transmission; [ ] Special Controls; [ ] Employment Only; [ ] Motorcycle Only; [ ] To/From Employment; [ ] Employer's Vehicle Only; [ ] State-Owned Vehicles; [ ] PP Chauffeurs Taxi Only; [ ] Power Steering; [x] Special Restrictions; [ ] Probation DWI; [ ] Probation HTO; [ ] None	Location of Most Severe Injury
	If Cited?: [ ] Infraction; [ ] Misdemeanor; [ ] Felony — IC Codes
Test Given: NONE — Type Given: [ ] Blood [ ] Urine [ ] Breath [ ] SFST [ ] PBT	
Alcohol Results: PBT / Certified Test [ ] Pending — Drug Results	
Veh# 1 | Color: WHITE | Vehicle Year: 1998 | Make: FORD | Model: EXPLORER | Style: 4D	Initial Impact Area: [ ] Undercarriage; [ ] Trailer; [ ] None; [ ] Unknown — Front / Rear
# Occupants: 2 | Lic Year: 2009 | License #: LZ9991 | License State: IN	
# Axles: 2 | Speed Limit: 45 | Insured By: INSURANCE PROP | Phone Number: 0000000000	
Vehicle Identification #: 00	Areas Damaged (Multiples): [x] Undercarriage; [ ] Trailer; [ ] None; [ ] Unknown — Front / Rear
Registered Owner's Name (Last, First, MI): LASER, CHARLES, T [ ] Same as Driver	
Address (Street, City, State, Zip): 8906 PEKIN RD	
GREENVILLE IN 47121	Vehicle Use: PERSONAL (FARM, COMPANY)
Towed? YES | To/By: A1 TOWING | Due to Disabling Damage	Emergency Run? | Fire?: NO
Lic State | Lic Year | Registered Owner's Name (Last, First, MI) [ ] Same as Driver	
License# | Address (Street, City, State, Zip)	Vehicle Type: UTILITY (SUV)
Veh Year | Make	Pre-Crash Vehicle Action: GOING STRAIGHT
Lic State | Lic Year | Registered Owner's Name (Last, First, MI) [ ] Same as Driver	
License# | Address (Street, City, State, Zip)	Direction of Travel: NORTH
Veh Year | Make	Type of Primary/Secondary Roadway — One Way Traffic: [ ] One Lane; [ ] Two Lanes; [ ] Multi-Lanes (3 or more) — Two Way Traffic: [ ] Two Lanes; [x] Multi-Lane Divided (3 or more); [ ] Multi-Lane Undivided 2 way left turn; [ ] Multi-Lane Undivided (3 or more); [ ] Private Drive; [ ] Alley
Commercial Vehicle: Carrier's Name and Address	
HAZMAT Proper Shipping Name: | State DOT#	Event Collision With: 1. GUARDRAIL END
US DOT# | ICC# | CMV Inspection | If Yes	
Gross Vehicle Weight Rating | Cargo Body Type	
HAZMAT Placard | HAZMAT Release of Cargo | HAZMAT 4-Digit ID# | Hazzard Class #	


20100348
03-02-10
Laser 10-50 Pd
Taylor 9218
Attachment 1
N
NOT TO SCALE
State road 135 and
Lanmark ave
looking North

WORK SHEET – DAMAGE TO STATE PROPERTY
INDIANA DEPARTMENT OF TRANSPORTATION
Report to CLAIMS AND COMPENSATION DEPARTMENT

I. Preliminary Field Investigation: (a) Observation Date: _____ (b) Observed By: _____
(c) Location Description (MM ###.# or Cross Streets & Direction): SR56 EB Near NE Dubois Rd Sside
(d) Description of Damage (Circle One or More): Guardrail (Crash Attenuator) Cable-Median Barrier Sign
Rutting Tension Anchor MSE Wall Traffic Sign Pole ITS Equipment Fence Other

II. Detailed Field Investigation: (a) Investigation Date: 8/18/2010 (b) Investigated By: Grant Farnsworth
(c) Detailed Location Description: SR56 EB Near NE Dubois Rd Sside (d) Lat/Longitude: 38.4841, -86.7714
(e) Detailed Damage Description: Repair located based on crash report
(f) Work Order Repair Estimated Pay Items (Quantities ONLY):

ITEM	QUANTITY
Crash Attenuator	1
INDOT Estimate/Inspection	?
Other contractor costs (e.g. traffic control, mobilization)	?

(g) Archived Crash Pictures Network Directory: No Pre-Repair Pictures

III. Office Investigation: (a) Crash ID: 901276232 (b) Crash Date: 02/09/2010
(c) Crash Record is Attached: (YES) / NO (d) Date Notification Letters Sent to Driver(s) & Insurer(s): _____
(e) Number of Drivers & Insurers Notifications Letters Sent To: ___
(f) Archived Repair Pictures Network Directory: C:\Seymour\OfficeInvestigation\901276232\RepairedPhotos
(g) New Archived Crash Picture Location: _____

IV. Work Order Repair Estimate: (a) Estimation Date: 08/23/2010
(b) Estimated By: G. Farnsworth (c) Final Pay Items: (See Back)

V. Approval to Proceed with Repair: (a) Responsi.ble Manager: _____
(b) Approval Date: _____ (c) Work Order #: _____

VI. Documentation of Repair: (a) Repair Date(s): _____ (b) Repaired by: INDOT / Contractor
(c) Photo of Repair Completed: Y / N (d) Inspected by (Optional): _____
(e) Detailed Schedule of Actual Pay Items and Costs (See Back)

VII. Accounting Tracking: (a) Invoice Date: _____ (b) Invoice Amount: _____
(c) Paid Date: _____ (d) Paid Amount: _____
(e) Close out Summary Details and Narrative: _____

Form M-54

Figure A.8: SR56 EB Near NE Dubois Rd invoice

WORK SHEET – DAMAGE TO STATE PROPERTY

INDIANA DEPARTMENT OF TRANSPORTATION

Report to CLAIMS AND COMPENSATION DEPARTMENT

				Work Order Repair Estimate		Actual Repair	
Description	Contract Item #	Unit	Unit Cost	Quantity	Estimate Cost	Quantity	Total Cost
GUARDRAIL Materials							
Guardrail Steel Beam Galvanized		LF	~$8.60				
Guardrail Post Bracket, 8.5 lb/LF, Galvanized		EA	~$19				
Guardrail Post, 8.5 lb/LF, 7' long, Galvanized		EA	~$63				
Guardrail Post Plumb		EA	~$16				
CRASH ATTENUATOR Materials							
Guardrail End OS		EA	$2,700	1	$2,700		
CABLE-MEDIAN BARRIERS Materials							
CMB Terminal Post		EA					
CMB HairPin		EA					
CMB LockPlate		EA					
CMB Tension Adjustment		EA					
Labor (with Benefits) (For INDOT)							
Foreman		HR					
Super		HR					
Laborer		HR					
Flagman		HR					
Equipment (For INDOT)							
Dump Truck		HR					
Attenuator Truck		HR					
Sign Board		HR					
Pick-up Truck		HR					
Maintenance of Traffic (For INDOT)							
Shoulder		HR					
Median		HR					
Single Lane Closure		HR					
On Bridge		HR					
FLAT FEES							
Mobilization		EA					
Crash Documentation (Pre or Post)		EA					
Clean Up (Just Repair/Replacement Materials....not vehicular damage)		EA					
Obtaining Crash Report		EA					
OTHER							
		COST ESTIMATE			**~$2,700**		
		ACTUAL COST					

Form M-54

REPAIR PHOTOS

Figure 1: SR56 EB; South side; Around NE Dubois; Repaired Crash Attenuator; Photo Facing South

Figure 2: SR56 EB; South side; Around NE Dubois; Repaired Crash Attenuator; Photo Facing East

INDIANA OFFICER'S STANDARD CRASH REPORT

Electronic Version

901276232

Page 1 of 3

Local ID: 3420100209161335

Date of Crash	Day of Week	Actual Local Time	County	Township	# Motor Vehicles	# Injured	# Dead	# Commercial Vehicles	# Deer
02/09/2010	Tue	4:12 PM	DUBOIS	COLUMBIA	1	0	0	0	0

Road Crash Occurred On	Nearest/Intersecting Road/Mile/Marker/Interchange	If not an intersection, number of feet from	Direction	Road Classification
SR56E	NE DUBOIS RD	1500	E	STATE ROAD

Inside Corporate Limits?	City/Town or Nearest City/Town	Property?	Crash Latitude	Crash Longitude
NO	JASPER	OTHER		

Driver #1	Driver #2	Driver #3	Driver #4
BRADSHAW,NICHOLAS,T			

Driver Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Alcoholic Beverages					
Illegal Drugs					
Prescription Drugs					
Driver Asleep or Fatigued					
Driver Illness					
Unsafe Speed					
Failure to Yield					
Disregard Signal					
Left of Center					
Improper Passing					
Improper Turning					
Improper Lane Usage					
Following Too Closely					
Unsafe Backing					
Overcorrecting					
Ran off Road	☑	☑			
Wrong Way on One Way					
Pedestrian's Action					
Passenger Distraction					
Restriction Violation					
Jackknifing					
Cell Phone Usage					
Other Telematics					
Driver Distracted					
Speed/Weather Conditions					
Unsafe Lane Movement					
Other					
None					

Vehicle Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Engine Failure or Defective					
Accelerator Failure or Defective					
Brake Failure or Defective					
Tire Failure or Defective					
Headlight(s) Defective or Not On					
Other Lights Defective					
Steering Failure					
Window/Windshield Defective					
Oversize/Overweight Load					
Insecure/Leaky Load					
Tow Hitch Failure					
Other					
None		☑			

Environment Contributing Circumstances	Primary Cause	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Glare					
Roadway Surface		☑			
Holes/Ruts in Surface					
Shoulder Defective					
Road Under Construction					
Severe Crosswinds					
Obstruction Not Marked					
Lane Marking Obscured					
View Obstructed					
Animal/Object in Roadway					
Traffic Ctl Inop/Missing/Obscure					
Utility Work					
Other					
None					

Area Information

Hit and Run	NO
School Zone	NO
Rumble Strips	NO
Locality	RURAL
Light Condition	DAYLIGHT
Weather Conditions	SNOW
Surface Condition	SNOW/SLUSH
Type of Median	NONE
Type of Roadway Junction	NO JUNCTION INVOLVED
Road Character	CURVE/HILLCREST
Roadway Surface	ASPHALT
Construction	NO
If Yes, Construction Type	
Traffic Control Devices	NO PASSING ZONE
Traffic Control Device Operational?	NA
Was this crash the result of aggressive driving?	NO

Total Estimate of all damage in the Crash: $50001 TO $100000

Other Property Damage (1)	State Property	Owner's Name and Address
Other Property Damage (2)	State Property	Owner's Name and Address

Witness/Other Participant

☐ Witness ☐ Other Participant | # | Name:

Address etc.

Phone # | Location at Time of Crash

☐ Witness ☐ Other Participant | # | Name

Address etc.

Phone # | Location at Time of Crash

Non-Motorist

(Last Name, First Name, MI)

Non-Motorist Type | Non-Motorist Action

Apparent Physical Condition

Cited? | Direction

Street/Highway

Traffic Control? | If yes, was traffic control operational?

901276232

Local ID
3420100209161335

Type of Crash HEAD ON

Time Notified	Time Arrived	Other Location of Investigation
4:17 PM	4:34 PM	AT SCENE ONLY

Assisting Officer	ID No.	Agency	Investigation Complete?	Photos Taken?
			YES	NO
Assisting Officer	**ID No.**	**Agency**	**Date of Report**	
			02/09/2010	
Investigating Officer	**ID No.**	**Agency**	**Reviewing Officer**	
ASHBY, G	6436	ISP JASPER 34	SGT J SMITH	

Narrative

Vehicle 1 was eastbound on State Road 56. Vehicle 1 entered a curve on top of a hill crest that was covered with ice and snow. Vehicle 1 left the south side of the roadway, struck the end of the guard rail support post, coming to rest on the south side of the guard rail. Driver 1 said that he was eastbound on SR 56 heading toward French Lick. He said as he entered the curve he lost control of the car and struck the guard rail. Passenger 1, Kelsey Nicole Dillard, DOB 2-10-1994, OLN 7120019432, did have minor scrapes from the air bag deploying but refused medical treatment. Vehicle 1 was not towed from the scene due to the weather conditions and the hazardous location. Vehicle 1 will be removed at a later date and was a total loss.

UNIT INFORMATION

Local ID: 3420100209161335

901276232

Page 3 of 3

1 Driver's Name (Last, First, MI): BRADSHAW, NICHOLAS, T	Safety Equipment Used: AIRBAG DEPLOYED + BELT RESTRAINT
Address (Street, City, State, Zip): 10693 SOUTH COUNTY ROAD 150 WEST	Safety Equipment Effective?: YES
ENGLISH IN 47118	Ejection/Trapped: NOT EJECTED OR TRAPPED
Date of Birth: 04/20/1991 / Age: 18 / Gender: MALE	EMS No. / Immed Attn / Driver Injury Status
Driver's License #: 4610002034 / Lic Type: DP / CDL Class / Lic State: IN	Nature of Most Severe Injury
Apparent Physical Status: [x] Normal; [ ] Had Been Drinking; [ ] Handicapped; [ ] Ill; [ ] Asleep/Fatigued; [ ] Drugs/Medication; [ ] Unknown	Restrictions: [ ] Glasses/Contact Lenses; [ ] Outside Rearview Mirror; [ ] Daylight Driving; [ ] Automatic Transmission; [ ] Special Controls; [ ] Employment Only; [ ] Motorcycle Only; [ ] To/From Employment; [ ] Employer's Vehicle Only; [ ] State-Owned Vehicles; [ ] PP Chauffeurs Taxi Only; [ ] Power Steering; [ ] Special Restrictions; [ ] Probation DWI; [ ] Probation HTO; [x] None
Location of Most Severe Injury	
If Cited?: [ ] Infraction; [ ] Misdemeanor; [ ] Felony	IC Codes
Test Given: NONE / Type Given: [ ] Blood [ ] Urine [ ] Breath [ ] SFST [ ] PBT	
Alcohol Results PBT / Certified Test [ ] Pending / Drug Results	
Veh# 1 / Color: RED / Vehicle Year: 1997 / Make: Pontiac / Model: SUNFIRE / Style: 2D	Initial Impact Area: [ ] Undercarriage; [ ] Trailer; [ ] None; [ ] Unknown
# Occupants: 2 / Lic Year: 2010 / License #: DY1619 / License State: IN	
# Axles: 2 / Speed Limit: 50 / Insured By: INDIANA INSURANCE / Phone Number: 8124812345	
Vehicle Identification #: 1G2JB1243V7560781	Areas Damaged (Multiples): [ ] Undercarriage; [ ] Trailer; [ ] None; [ ] Unknown
Registered Owner's Name (Last, First, MI) [ ] Same as Driver: BRADSHAW, SHERYL H	
Address (Street, City, State, Zip): 10693 SOUTH COUNTY ROAD 150 WEST	
ENGLISH IN 47118	Vehicle Use: PERSONAL (FARM, COMPANY)
Towed? NO / To / By / Due to Disabling Damage	Emergency Run? / Fire?: NO
Lic State / Lic Year / Registered Owner's Name (Last, First, MI) [ ] Same as Driver	
License# / Address (Street, City, State, Zip)	Vehicle Type: PASSENGER CAR/STATION WAGON
Veh Year / Make	Pre-Crash Vehicle Action: LEAVING TRAFFIC LANE
Lic State / Lic Year / Registered Owner's Name (Last, First, MI) [ ] Same as Driver	Direction of Travel: EAST
License# / Address (Street, City, State, Zip)	Type of Primary/Secondary Roadway — One Way Traffic: [ ] One Lane; [ ] Two Lanes; [ ] Multi-Lanes (3 or more) — Two Way Traffic: [x] Two Lanes; [ ] Multi-Lane Divided (3 or more); [ ] Multi-Lane Undivided 2 way left turn; [ ] Multi-Lane Undivided (3 or more); [ ] Private Drive; [ ] Alley
Veh Year / Make	
Commercial Vehicle: Carrier's Name and Address	
HAZMAT Proper Shipping Name: / State DOT#	Event Collision With: 1. GUARDRAIL END
US DOT# / ICC# / CMV Inspection / If Yes	
Gross Vehicle Weight Rating / Cargo Body Type	
HAZMAT Placard / HAZMAT Release of Cargo / HAZMAT 4-Digit ID# / Hazzard Class #	

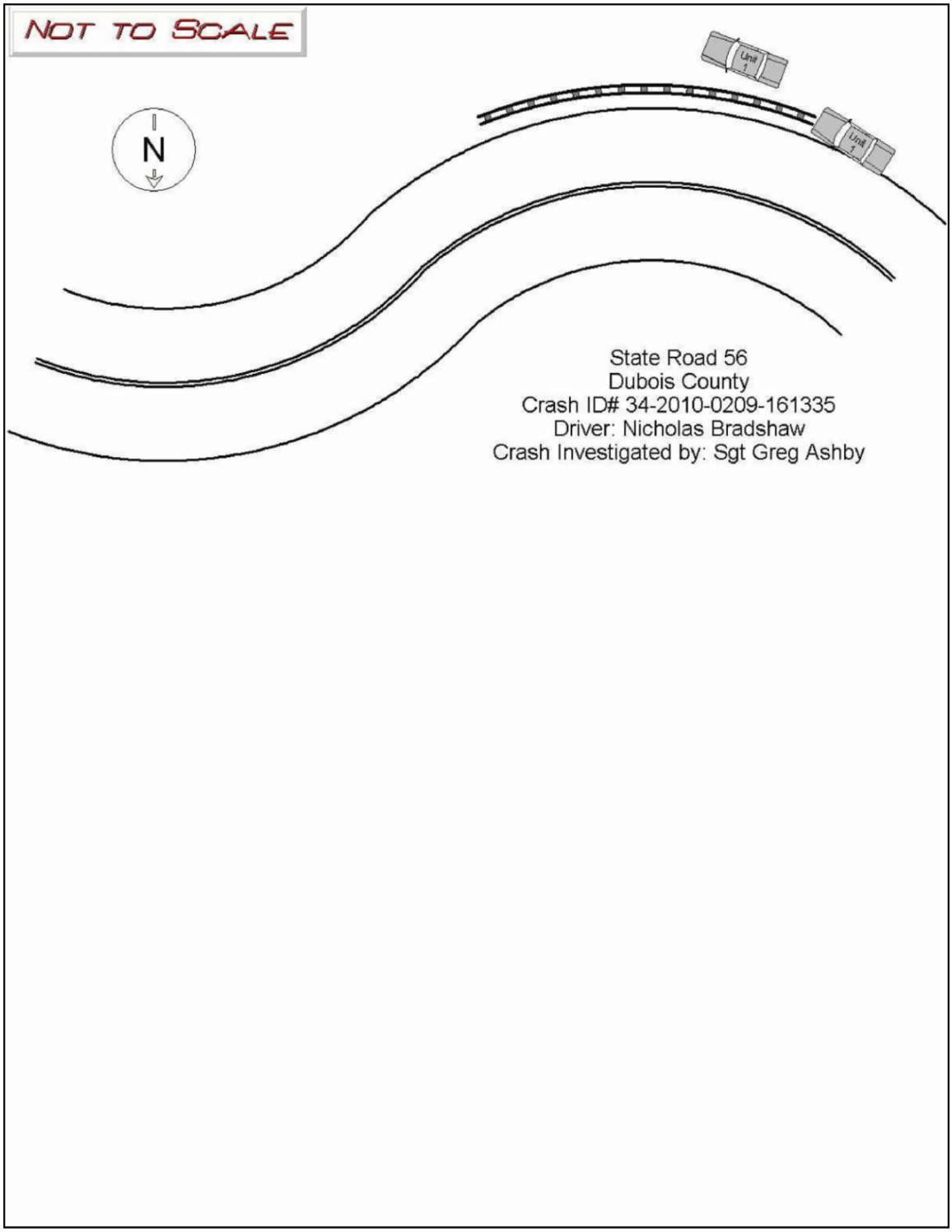


Figure A.9: ARIES query criteria fields (79)

Agency
Aggressive Driving
BAC Results
City
Collision Road Clas
Collision Status Date
Collision Time
Collision With
Construction Indicator
Construction Type
Contributing Circumstances
County
Damage Estimate Amount
Date of Birth
Date of Collision
Date of Processing
Driver License Number
Feet From Intersection
First Name
Gender
Hit and Run Indicator
Individual Test Given
Injury Location
Injury Status Desc
Inside Corp Limit
Interchange
Intersection
Intersection Mile Marker
Intersection Number
Last Name
Latitude
License Plate Number
Light Condition
Local Code
Locality
Longitude
Master Record Number
Number Dead
Number Injured
Number of Commercial Vehicles
Office Last Name
Person Type
Person's Age
Photos Taken Indicator
Primary Factor
Property Type
Ramp
Roadway
Roadway/Intersection
Rumble Strip Indicator
Safety Equip Used
Safety Equipment Effective
School Zone Indicator State Property Indicator
Submission Type
Surface Condition
Surface Type
Township
Traffic Control
Traffic Control Operational
Trailers Involved
Type of Crash
Type of Median
Type of Roadway
Unique Location ID
Urban/Rural
Vehicle Emergency Run
Vehicle Licensed State
Vehicle Make
Vehicle Model
Vehicle Pre-Crash Action
Vehicle Towed Indicator
Vehicle Travel Direction
Vehicle Type
Vehicle Use
Vehicle Year
Vehicles Involved
Weather Condition